ViewCast®

Niagara® 2200 User Guide

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Corporate Contact Information

ViewCast collaborates and partners with various clients to integrate products into their individual environments.

Niagara Technical Support: Phone: 972.488.7157, Fax: 972.488.7111 or submit the technical support online request from the ViewCast website.

ViewCast USA Support: Monday through Friday: 9 a.m. – 5 p.m. Central Time. Typical response time is within one business day for customers without a Priority Support Agreement.

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Before You Begin

Thank you for purchasing the ViewCast Niagara 2200 streaming media appliance. This user guide provides step-by-step instructions for installing and using your new streaming media appliance. For the latest ViewCast product information and news, visit our website at www.viewcast.com.

Product description

The ViewCast Niagara 2200 streaming media appliance is a low-cost, easy-to-use, streaming media appliance that supports Adobe Flash® H.264, MPEG-4, and Microsoft® Windows Media (Silverlight®) standard and high definition as well as container support for 3GPP and 3GPP2.

The Niagara 2200 is built on the legendary quality of ViewCast Osprey® video capture card technology, which means you can count on the same highly reliable performance demanded by others who use ViewCast technology, including the world's leading broadcasters and content delivery networks.

The built-in web interface of the Niagara 2200 simplifies system set-up and operation, allowing complete system control from anywhere on the network. The ViewCast SimulStream® driver enhancement software technology comes standard with the Niagara 2200, which means you can stream in multiple, simultaneous resolutions, and bit rates to computers, set top boxes, cell phones, and mobile devices anywhere around the world. ViewCast's Niagara® SCX streaming media management software is also included with the Niagara 2200, enabling centralized set-up, monitoring, and control.

The Niagara 2200 streaming media appliance (Figure 1) allows you to maximize your audience through web-based video delivery. It lets you reach your audiences where they live and allows you to stream both live and on-demand video to any IP network. With support for the most common streaming formats, you are afforded high-performance streaming capabilities across a broad range of bandwidths to elevate the quality and impact of your Internet video programming. Now you may truly enjoy the power and flexibility of more expensive professional-grade streaming appliances in the compact, easy-to-use Niagara 2200.

Figure 1. ViewCast Niagara 2200

Audience

The audience for this publication includes anyone who uses or administers the Niagara 2200. They should have a basic technical understanding of streaming media. This user guide provides information on the Niagara 2200 only.

Conventions for this guide

This guide uses the document conventions specified in the following table to help you identify different types of information.

Convention	Description	Example
Bold text	Characters to enter when referenced in a procedure. The names of keys or keys to press.	In the example, enter **DTMF** as the group type. Press **Enter** to save your changes.
Note:	Provides supplemental information.	*Note: The prompt may not display if …*
IMPORTANT!	Provides important data that affects how the system or software responds.	*IMPORTANT! You must install Niagara SCX prior to configuring SCX options…*
CAUTION!	Provides information to help avoid possible damage to hardware or a system crash (without data loss).	*CAUTION! Use case sensitive commands to keep from destroying…*
WARNING!	Provides information to ensure you avoid potential injury, death, or permanent system damage.	*WARNING! Do NOT touch exposed wires.*

Rack mount safety instructions

Operating Temperature	The operating ambient temperature of a rack environment may be greater than room ambient if installed in a closed or multi-unit rack assembly. Therefore, users should install the equipment in an environment compatible with the maximum ambient temperature of 40° C.
Reduced Air Flow	You must not compromise the airflow required for safe equipment operation when you install the equipment in a rack.
Mechanical Loading	Mounting of the equipment in the rack should be such that you do not cause a hazard due to uneven mechanical loading.
Circuit Overloading	Consider the connection of the equipment to the supply circuit and the effect that the overloading of the circuits might have on current protection and supply wiring. You must also consider and use the equipment nameplate ratings when you address this concern.
Reliable Grounding	You must maintain reliable earth grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (such as using power strips).

FCC notice

WARNING! You must connect this device and peripherals using shielded cables that comply with FCC radio emission limits.

WARNING! Modifications to this device not approved by ViewCast Corporation could void the FCC-granted authority for the user to operate the device.

WARNING! The Niagara 2200 complies with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits provide reasonable protection against harmful interference when users operate the equipment in a commercial environment. This equipment generates, uses, and may radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area will likely cause harmful interference. In this case the users must correct the interference at their own expense.

Note: To CATV Installer: Pay special attention to Section 820-40 of the NEC that provides guidelines for proper grounding. It particularly specifies that you must connect the cable ground to the grounding system of the building as close to the point of cable entry as practical.

WARNING! Equipment installation must comply with local and national electrical codes.

Installing additional software

The Niagara systems run an embedded version of the Microsoft Windows 7 operating system (OS), which is a sub-set of the normal retail version. The Microsoft License agreement limits the use of the system to what the machine is designed to do.

The Microsoft Update process is turned off by default to prevent interruptions during live streaming events. It is also not advised to use a Windows 7 installation CD to add features to the system or the appliance may fail.

You may load additional software on the appliance; however, ViewCast does not support this additional software. You also need to ensure the primary drive is not full or the appliance will fail. In the event of a problem, you may need to perform a Factory Restore, which returns the appliance to the original software load. You may save the current encoder profiles and reload them when the Factory Restore is complete.

You can perform a Factory Restore at any time. This process returns the appliance to the software load that came with the appliance. Perform a Factory Restore if the appliance becomes unstable due to installed applications, viruses, etc. Please refer to the user guide for instructions.

ViewCast Support can provide assistance should the system fail to start. In most cases, you can restore a system to operation without returning it to ViewCast. There is a fee in the event a user returns an system due to applications the user installed or if the appliance failed because the primary partition (drive C) is full.

Connecting to the Internet

Never connect a Niagara system directly to the Internet. ViewCast recommends taking precautions against unwanted access such as installing Niagara systems behind a router or firewall. The speed of the router or switch should match or exceed the speed of the system's network card. See your network administrator for recommendations.

Environmental notices

Product Disposal Information:

Dispose of this product in accordance with local and national disposal regulations (if any). Include those regulations governing the recovery and recycling of Waste Electrical and Electronic Equipment (WEEE).

RoHS Compliant:

ViewCast Corporation commits to compliance with the European directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, Directive 2002/95/EC, the RoHS directive.

This product supplied to the European Union does comply with the RoHS directive. ViewCast certifies that this equipment shipped to the European Union conforms to the 2002/95/EC directive.
For current RoHS statement, see www.viewcast.com**.**

Underwriters Laboratories Inc. Statement

Underwriters Laboratories Inc. has not tested the performance or reliability of the security or signaling aspects of this product. UL only tested for fire, shock and casualty hazards as outlined in UL's Standard for Safety UL 60950-1. UL Certification does not cover the performance or reliability of the security or signaling aspects of this product.

UL does not represent, warranty, or certify the performance of reliability of any security or signaling related functions of this product.

Warnings

Only trained and qualified personnel should install, replace, or service this equipment.

Do not attempt to open the case of the appliance. If you do so, you incur a high risk of electrical shock that may cause damage to the appliance or personal physical injury or death to you and/or others. No user-serviceable parts exist inside the appliance. If you open the appliance case or make unauthorized changes to the case, ViewCast voids your warranty.

Install the appliance away from any heat sources. This remains vital to the safety of the product users. Do not install the appliance near any heat sources such as:

- Radiators
- Heat registers
- Stoves
- Other heat-producing equipment

WARNING! Installing the appliance near heat sources could result in personal injury or death.

WARNING!Never insert objects of any kind into the appliance through any appliance openings, as the objects may touch dangerous voltage points, short out parts, and result in a risk of fire or electrical shock.

Do not stack the appliance atop or below other electronic devices as this can cause heat build-up and vibration of the appliance. These conditions can damage the appliance thereby voiding the limited warranty.

You may stack multiple Niagara 2200 units as these appliances accommodate stacking.

Do not install the appliance in any area where the temperature is less than 5°C or more than 40°C. Transfer from temperature extremes may cause condensation. Let the appliance remain unplugged at room temperature for at least 45 minutes before connecting it.

Use an outlet with surge suppression or ground fault protection when using the appliance. Unplug the power cord from the wall outlet and disconnect the lines between the appliance and the video source for added protection:

- During a lightning storm
- During dangerous weather conditions
- When the encoder remains unattended or unused for long periods

Reduce the risk of fire or electric shock. Do *not* expose the appliance to any rain or moisture. Exposing the appliance to rain or other types of moisture could result in appliance damages. Do not place any liquids on or near the appliance. If you place liquids in any form on or near the appliance, do so at your own risk, for you incur a high risk of electrical shock that could occur and cause damage to the appliance.

WARNING! Exposing the appliance to rain or other types of moisture could result in physical injury or death. Any liquids on or near the appliance may result in electrical shock and personal injury or death.

Refer all servicing to authorized service personnel. You must have authorized personnel only service any damaged appliance. Relevant damage may occur with but is not limited to the following:

- An unplugged or damaged power supply cord
- Spilled liquid on the appliance
- Fallen objects on the appliance
- Appliance exposure to rain or other moisture or liquid
- Failure to perform functions as described in the User Guide
- A dropped appliance

ViewCast assumes no liability or responsibility for any damaged appliance that clients continue using.

Use only attachments, accessories, or equipment specified by the manufacturer with the appliance. Using accessories or attachments not recommended by the encoder manufacturer voids the Limited Warranty.

Do not attempt to service the appliance yourself. If you open or remove covers, you may expose yourself to dangerous voltage. Such action voids the Limited Warranty. Refer all servicing issues to authorized service personnel only.

The plug-socket combination that serves as the main disconnecting device must be accessible at all times.

Protect the power cord from anyone walking on it and being strained or pinched particularly at plugs, electrical receptacles, and the point where the power cord exits the appliance.

Do not use adapter plugs or remove the grounding prong from the power cable.

Use only the type of power source indicated on the marking label on the back panel of the unit to operate the appliance. Unplug the appliance power cord by gripping the plug and removing it from the power source. Do not pull the cord to remove the power source from the appliance.

Do not plug the appliance into a wall outlet that contains an overload of electrical cords or power strips/extension cords. This type of overload may result in fire or electrical shock risks.

Always handle the appliance carefully. Always avoid excessive shock and vibration to the appliance. Excessive shock or vibration can damage the appliance.

WARNING! Excessive shock or vibration to the appliance may result in electrical shock and personal injury or death.

Overview

Before you can use your Niagara 2200 streaming media system, you will first need to set up and configure it. This chapter provides you with the details and step-by-step instructions you need to make your installation as quick-and-easy as possible.

All you need to get started are the four following requirements:

- Your audio and video source (such as a camera or deck)
- A streaming media server or hosting provider (for Adobe® Flash or Windows Media)
- An IP connection and/or Internet connection
- A networked computer running a compatible browser

The Niagara 2200, an easy-to-use streaming device, allows you to:

- Connect to a compatible browser on a dynamic host configuration protocol/domain name server (DHCP/DNS) network.
- Configure and connect your audio and video source to the Niagara 2200.
- Select your output formats and streaming settings.
- Enter your streaming server information.
- Start streaming your media.

You can configure and use the Niagara 2200 straight from the box for any streaming activities. Use the web interface for setting options and controlling your Niagara 2200 from another networked computer, as well as advanced options.

WARNING! Read the installation instructions before connecting the system to the power source.

Media system functions

Although it has many features and capabilities, the Niagara 2200 streaming media encoder performs, in its most basic functions, as follows:

- Takes analog audio and video inputs
- Captures the signals
- Encodes the signals into digital IP video formats
- Delivers the IP audio and video content to a storage device or streams it over an IP network

Install overview

This section addresses the high-level actions you must perform to physically connect and setup your Niagara 2200 system.

You must complete the following primary tasks to install the Niagara 2200:

1. Address and comply with all prerequisites.
2. Connect the Niagara 2200 streaming media appliance using its power source.
3. Connect the video source (camera or video recorder) to the system.
4. Connect the Niagara 2200 to an IP network.
5. Configure the Niagara 2200 system.

Prerequisites

Before installing and connecting the Niagara 2200, ensure you comply with the following prerequisites:

- All packaged items are undamaged and in working order.
- Your environment meets all system requirements.
- Safety instructions, notices, and warnings including:
    - *Rack Mount Safety Instructions*
    - *FCC Notice*
    - *Environmental Notices*
    - *Warnings*

Package contents

Completely unpack all contents from the box and inspect each item for damage. Ensure that you have all the components listed below:

Appliance	• Niagara 2200

Power Cables	• One of the following:
	  ○ *North America Power Cable (110 vac)*
	  ○ *International Power Cable (220 vac)*
	  ○ *UK Power Cable (220 vac)*
	• AC to DC converter

Converter	• BNC-to-RCA, male-to-female (3) • BNC-to-mini-DIN (S-Video) adapter
Guides	• Package insert (end-user license agreement, welcome letter, package content list) • User guide (on CD in PDF format) • Quick Start Guide
Software	• Niagara 2200 CD

If any components are missing or damaged, do not continue with the installation. Contact the ViewCast reseller from which you purchased your Niagara 2200 streaming media appliance for assistance in obtaining any missing parts or for parts replacement.

System requirements

Ensure your computer meets the following system requirements.

Browser Interface	Any Internet Explorer (IE)-based computer, workstation, or laptop that interfaces to a dynamic host configuration protocol/domain name server (DHCP/DNS)-compatible network
User Interface	High speed internet, dial-up, and mobile device users

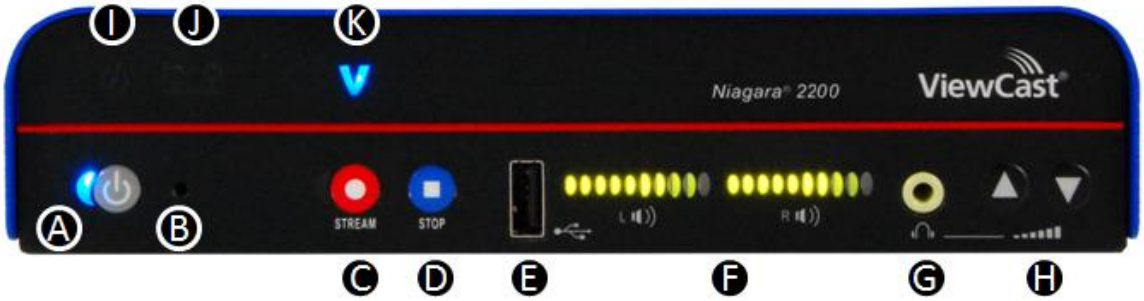
Specifications

- Dual core processor
- 1 GB RAM
- SATA HDD (*120 GB or larger*)
- Compact – 1 RU, ½ Rack (*11.5" x 7.5" x 1.75")*
- 4.9 lbs (2.2 kg)
- 60 W power supply

Niagara 2200 front panel

You should familiarize yourself with the front panel controls for the Niagara 2200. Besides the basic buttons for power, start/stop, and audio volume control, several indicator lights also exist. Figure 2 and the table below illustrate the buttons and lights that constitute the front panel functions and interfaces.

Figure 2. Niagara 2200 Front Panel



A	• Starts the Niagara 2200. • Press this button once to turn off the Niagara 2200 when it is on. • Press and hold for 5 seconds to execute an immediate power off. *IMPORTANT! Do **not** attempt to encoder while the light is blinking.*

B	• Resets the Niagara 2200.
	• Use a pointed device to insert in the hole and press the reset button.
	• This button has three different options:
	  ○ *Press and release after the first set of 10 LEDs start to light (approximately one to three seconds) to reboot the Niagara 2200.*
	Note: The lights on the volume indicator will illuminate in one-second intervals.
	  ○ *Press and release after the second set of 10 LEDs **start** to light (approximately 4 to 6 seconds) to keep all set profiles and restore the Niagara 2200.*
	*Note: The lights on the volume indicator will illuminate in one-second intervals, but do **not** progress all the way to the far right.*
	  ○ *Press and hold for approximately 10 seconds until all 20 LEDs remain lit to restore the Niagara 2200 to complete factory defaults.*
	
	IMPORTANT! The last option deletes all previously set profiles.

C	• Initiates streaming of all profiles assigned to the button. *Note: Do not attempt to encode while light continues blinking.*
D	• Stops the encoder streaming activity when you press this button once.

E	• Allows exporting files to USB devices and installing updates or firmware.
F	• Audio feedback meters. • Shows incoming left and right channel input.
G	• Allows for connection of headphones to the Niagara 2200 for audio monitoring.
H	• Audio level headphone control. • This control changes the volume on the headset output only.
I	• This indicator illuminates when a system alert occurs.
J	• Displays to indicate a remote user. • A remote user is accessing the Niagara 2200 across the network.
K	• Video encoding status (active).

Review the Niagara 2200 back panel

Figure 3 illustrates all connectors and other components of the Niagara 2200 back panel.

Figure 3. Back panel

A	• Qualified ViewCast field technicians should be the only ones to use this connection.
B	• Direct current (DC) power supply for power input (12 Volt). • This port allows you to connect the Niagara 2200 to its power supply.
C	• Connects the Niagara 2200 to the IP network.
D	• Connects the composite video for the Niagara 2200. • This analog component video BNC for Pb input allows professional-grade video connections.
E	• Connects USB control devices, such as a memory card (USB memory device, keyboard, and mouse).
F	• Standard video port that provides (Y) connection in S-video (Y/C) for most BNC video cameras and players. • This analog component video BNC for Y input allows professional-grade video connections.
G	• This analog component video BNC for Pr input allows professional-grade video connections.
H	• Left/Right XLR connector for line level balanced audio sources. • Professional audio engineers use these inputs on high-end audio and video playback equipment. • Noise cancellation and balanced stereo.
I	• Left/Right RCA connector for stereo input. • Found on most standard video players and cameras.

Connecting the Niagara 2200

The following steps refer to a direct connection to the Niagara 2200. The example uses composite video input and unbalanced audio.

To configure the Niagara 2200:

1. Connect the composite video (CVBS Pb – item D on Figure 3). Ensure you have a tight connection by rotating the cuff to connect.
2. Connect the right and left audio. Refer to Figure 3 item I for left and right connections.
3. Connect the power DC adaptor by linking the clasp over the top anchor (12V DC Input – item B on Figure 3).
4. Attach the Niagara 2200 to the network input (PRI Network – item C on Figure 3).
5. Press **Power** (item A on Figure 2).

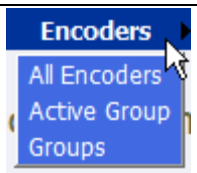
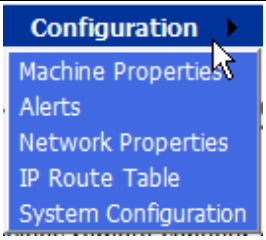
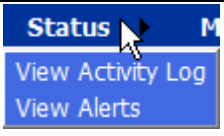
Niagara 2200 home page

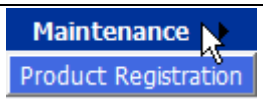
The home page menu bar (Figure 4) allows you to use the commands described in the following table.

Figure 4. Menu bar

Menu bar commands

The home page menu bar allows you to use the commands described in the table below.

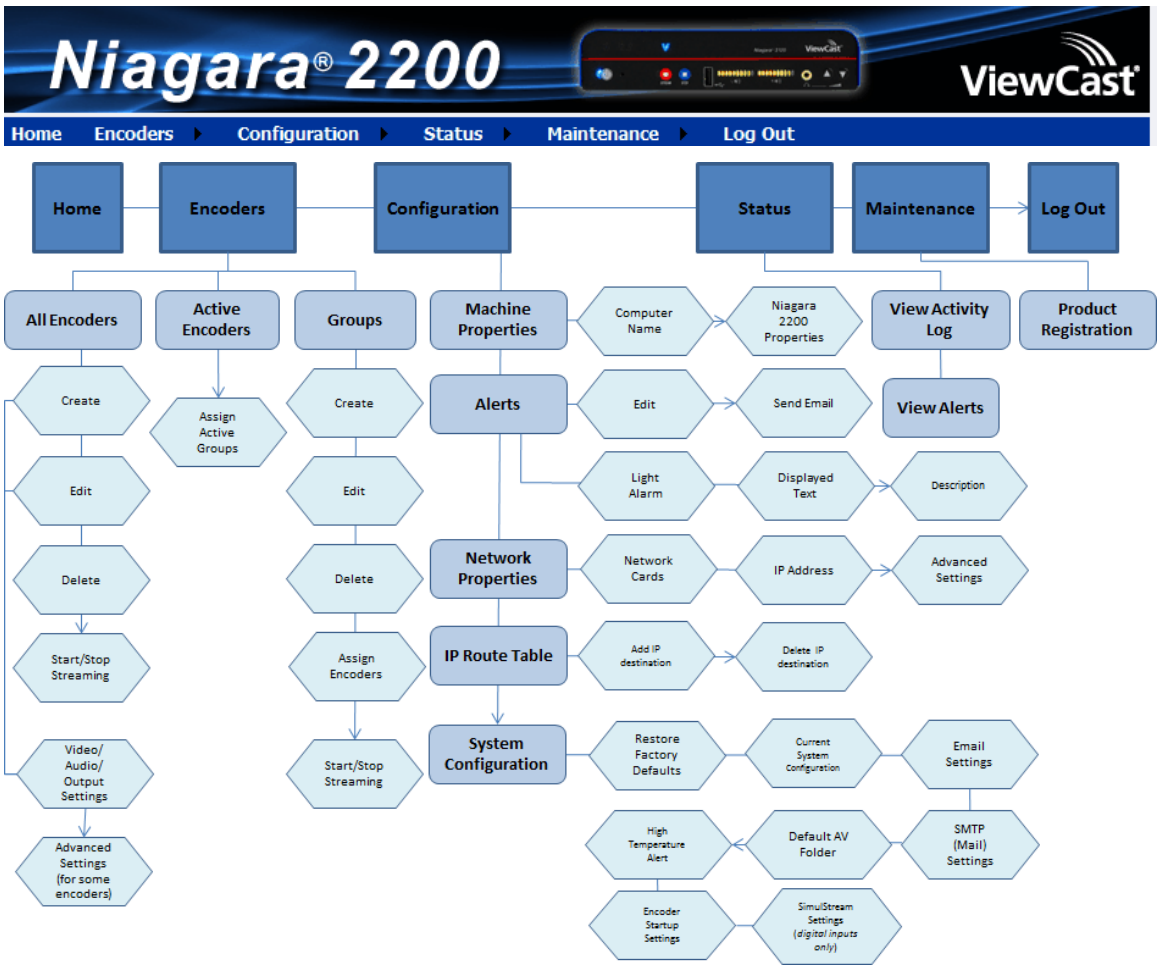
Menu	Command	Function
Home		• View general administrative information about the ViewCast Niagara 2200. • Use the menu bar commands.
Encoders		• **All Encoders** – View the encoder profiles available to start on the encoder box. • **Active Group** – Allows you to set the one group that you assign to the front panel **Stream** button. • **Groups** – Assign groups and encoders to that group.
Configuration		• **Machine Properties** – View details on the Machine Properties of the Niagara 2200 including the Network Name, Serial Number, and all software versions installed. • **Alerts** – Modify the settings for each application alert Niagara 2200 can generate during normal operations. • **Network Properties** – View information on Niagara 2200 network properties and addresses for both NIC ports and modify these properties. • **IP Route Table** – Add or delete IP destinations. • **System Configuration** – Modify the system configuration including setup for email alerts from Niagara 2200 whenever it encounters an operation error.
Status		• **View Activity Log** – View all Niagara 2200 activities including the time and date for each event. • **View Alerts** – View all alerts including the time

		and date for each alert.
Maintenance		• **Product Registration** - Register your Niagara system to protect your investment.
Log Out		• Allows users to log off the system's web interface.

Niagara 2200 browser windows flow

Figure 5 shows the interrelationship and flow of the available configuration windows you may use to configure the Niagara 2200.

Figure 5. Niagara 2200 browser windows



Easy Setup

The easy setup option explores the optimal configurations for the novice user to set up the Niagara 2200 quickly and easily. Easy setup includes actions you can perform on your Niagara 2200 streaming media encoder using the web interface to include configuring the following:

- Encoder settings
- Groups
- Network properties
- Machine properties
- System
- System alerts

Web interface

The Niagara 2200 web interface presents a logical flow of configuration information for the encoding system. Refer to Figure 5 for a diagram and main menu options. Major considerations display on the main menu and address:

- Home
- Encoders
    - *All Encoders including Encoder Properties*
    - *Active Group*
    - *Groups*
- Configuration
    - *Niagara Properties*
    - *Alerts including Settings*
    - *Network Properties*
    - *IP Route Table*
    - *System Configuration*
- Status
    - *Activity Log*
    - *Alerts*
- Maintenance
    - *Product Registration*
- Log Out

Easy first time setup

You should read all instructions, notices, and warnings before getting started with your new Niagara 2200 hardware for the first time. Also, ensure you have all required parts and meet all system requirements before installing this product.

Do not continue with the installation if you find any components missing or damaged. Contact the ViewCast reseller where you purchased your Niagara 2200 system for assistance in obtaining any missing or replacement parts.

Connecting to an electrical power source

Niagara 2200 ships with one of the following power cables:

- North America power cable
- International power cable
- UK power cable

To connect the power source:

1. Attach the block end to the power cable that comes with the equipment.
2. Connect the adaptor to the unit 12 VDC input located on the upper back panel corner of the Niagara 2200.

WARNING! The plug-socket combination must remain accessible at all times as it serves as the main disconnecting device.

Do not work on the system or connect or disconnect cables during periods of lightning activity.

Performing the initial startup

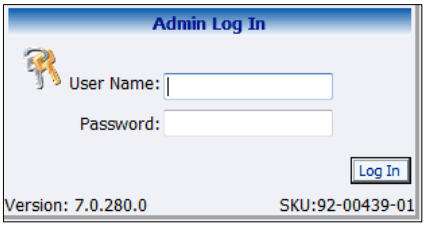
The steps in the following table refer to a *direct* connection to the Niagara 2200 only.

To perform the initial startup:

1. Ensure that you connect all devices (power cords, appliances, streaming devices, etc.) to the Niagara 2200.
2. Press **Power** on the front panel to start the Niagara 2200.
3. Locate the serial number on the bottom of the appliance (in the format **vpxxxxxxxx**).
4. From another computer on the same DHCP/DNS network as the Niagara 2200, launch Internet Explorer and type in **http://** and the serial number of your Niagara 2200.
5. If you do not have a DHCP network or you cannot connect to the Niagara 2200 through its DNS name, you can connect a monitor, mouse, and keyboard directly to the Niagara 2200 to obtain or change the IP address. Connect a standard VGA monitor to the service connector and the mouse/keyboard to USB ports. The Niagara 2200 will have a Microsoft 7 desktop. From the Desktop, you will launch Internet Explorer.
6. Enter your valid user name and password and click **Log In** when the **Admin Log In** window (Figure 6) displays.

   IMPORTANT! The setting to log in for the first time, defaults to the user name admin and the password admin.

   Figure 6. Admin Log In window

   Note: System administrators should previously configure all user names and passwords for those who they allow to log on to the system.

7. The first time you start the Niagara 2200 and log in, the system prompts you for the date, time, and video standard (Figure 7). You may accept the default date, time, and video standard or enter your desired date, time, and video standard then click **Submit**.

Figure 7. Date and time settings

Note: The appliance reboots. If it doesn't you need to manually reboot the system from the Machine Properties window.

8. The **Admin Log In** window may reappear once you submit the date, time, and video standard fields. You must enter User Name and Password again.

This time when you enter your valid user name and password, the system displays the **Welcome** window (Figure 8) and Niagara 2200 **Main Menu**.

Figure 8. Welcome window

Note: You must identify, at a minimum, an encoder, a group, and basic system and network configuration settings.

The Niagara 2200 front panel status light remains solid green once it becomes ready to begin streaming.

Registering your product

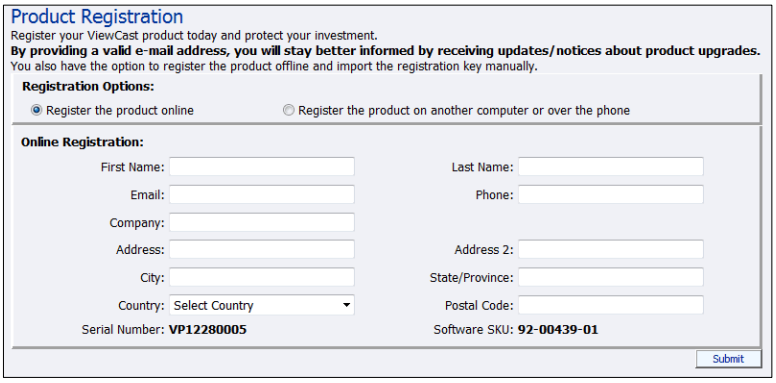
You have 30 days to register your product when you first activate the system. A reminder displays at the bottom of the Home and Encoders pages. You can register your system using three different methods:

- Product Registration page
- ViewCast website
- ViewCast Support help desk (Call 972-488-7157 and provide the serial number and SKU.)

To register online:

1. Access the Product Registration page:
   Click **Maintenance ➢ Product Registration**. The Product Registration page displays (Figure 9).

Figure 9. Product Registration



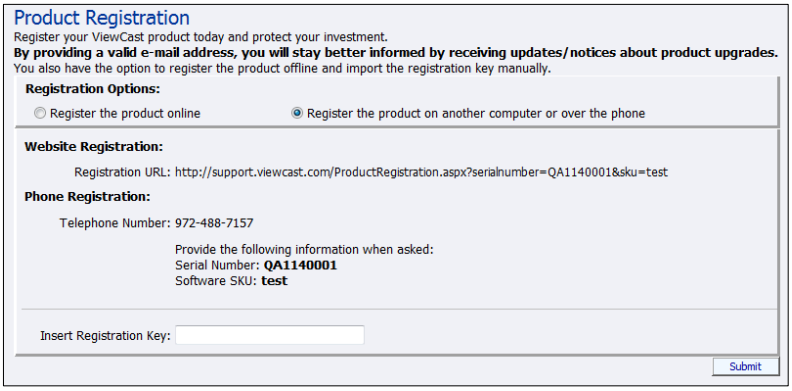
*Note: The default is **Register the product online**.*

2. Enter your name and contact information in the spaces provided.
3. Click **Submit**. After a few seconds, a confirmation message displays.

To register at viewcast.com:

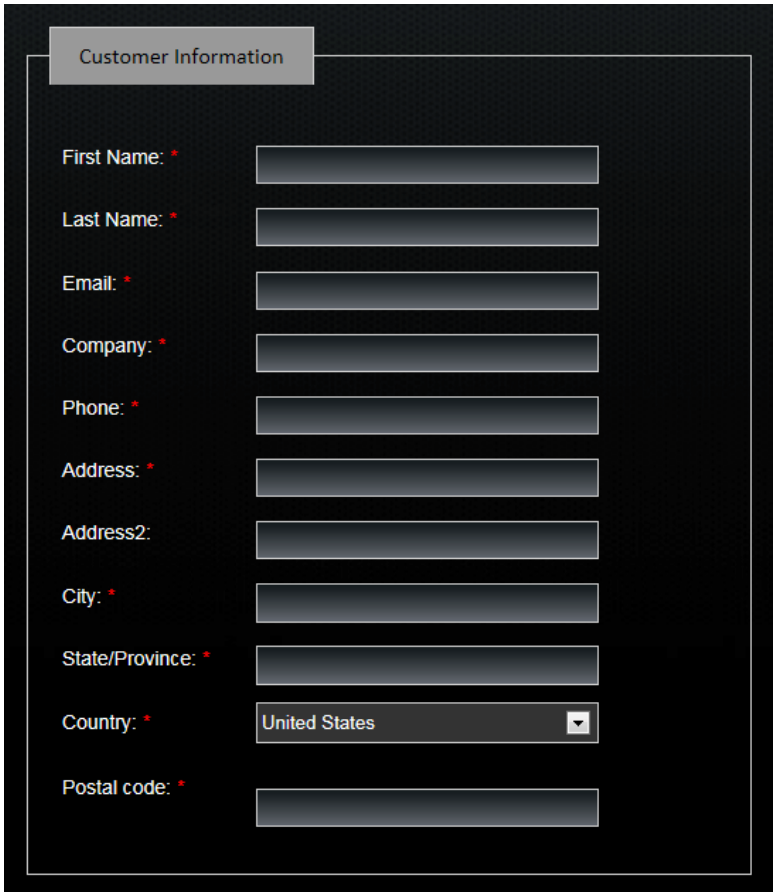
1. Access the Product Registration page:
   Click Maintenance ➢ Product Registration. The Product Registration page displays (Figure 9).
2. Click Register the product on another computer or over the phone (Figure 10).

Figure 10. Register the product on another computer or over the phone



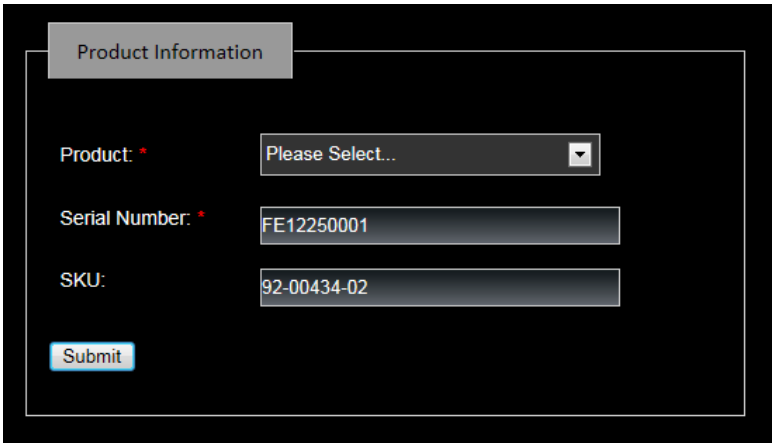
3. Copy the registration URL.
4. From another computer, open a browser and paste the URL into the address bar.
5. Enter your name and contact information in the spaces provided.

Figure 11. Contact Information



6. Select the type of product. The serial number and SKU are automatically populated.

Figure 12. Product information



7. Click **Submit**. After a few seconds, a confirmation message displays.

Connecting to an IP network

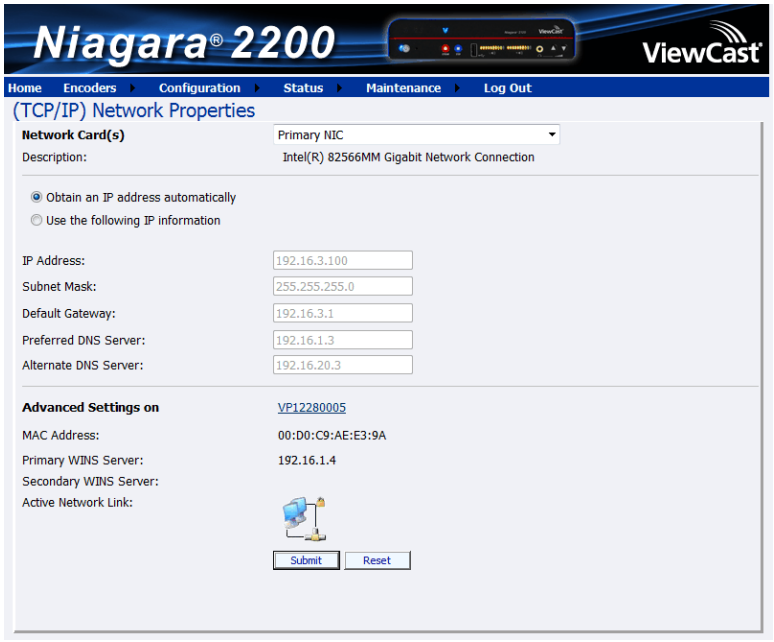
The Niagara 2200 network settings for its network interface defaults to obtain an IP address from a DHCP server on the network. If a DHCP server is not available or is not on the network, Niagara 2200 assigns its own IP address.

Note: If you are not familiar with network protocols, contact your network administrator for assistance. If you are not able to browse to the unit with a DHCP network, you may connect a monitor, keyboard, and mouse to the Niagara 2200 to determine and set the network connections.

To connect to an IP network:

1. Click **Configuration ➢ Network Properties**. The Network Properties window appears (Figure 13). The serial number is in the IP Address field.

Figure 13. Connect to IP network



Note: You need not modify these default settings for most network environments.

2. Click **Submit** to accept all network settings you configure.

Defining the network properties

The following table provides Network Properties and the actions you can choose for each. To view this window, click **Configuration ➢ Network Properties**, and then click **Use the following IP information**.

Field	Action
Network Cards	Options include primary NIC and secondary NIC
Description	Describes the NIC option
Obtain an IP address automatically or Use the following IP information	Click one of the radio buttons to either obtain an IP address automatically or use input IP information (user inputs). Refer to **IP Address** field below for information on setting your own IP address.
IP Address	Input or accept the default static **IP address**. Press **Enter** to accept your selection.
	*Note: You can only perform this action and the next four (Subnet Mask, Default Gateway, Preferred DNS Server, and Alternate DNS Server) if you click **Use the following IP information**. You must click **Submit** to save any changes.*
Subnet Mask	Input or accept the default. Press **Enter** to accept your selection.
Default Gateway	Input or accept the Default Gateway. Press **Enter** to accept your selection.
Preferred DNS Server	Input or accept the default preferred domain name server (DNS). Press **Enter** to accept your selection.
Alternate DNS Server	Input or accept the default alternate domain name server (DNS). Press **Enter** to accept your selection.
Advanced Settings On	• You may accept the default workstation identifier (**Advanced Setting on** field). • You may alternately enter a new computer name by clicking the underlined computer name to go to the Machine Properties window and click **Edit** to change the computer name. Click **Submit** to change the name.
	Note: If you change the computer name, you must reboot the system after you submit it.
MAC Address	View the default Media Access Control (MAC) address.
Primary WINS Server	The primary windows server identifier.
Secondary WINS Server	The secondary windows server identifier.
Active Network Link	Displays the status of the network link. Position your cursor in any appropriate field and enter your selections. Press **Enter** or **Submit** to accept all selections.

Basic Operations

Basic operations include but are not limited to the following:

- Viewing all encoders
- Creating an encoder
- Starting an encoder
- Editing an encoder
- Stopping an encoder

Logging in

To log in:

1. Locate the serial number on the side or bottom of the appliance (in the format **vp11xxxxxx**).
2. Open the web browser on your computer.
3. You can either:
   - Type the Niagara 2200 serial number in the Address bar (Figure 14) and press **Enter**.

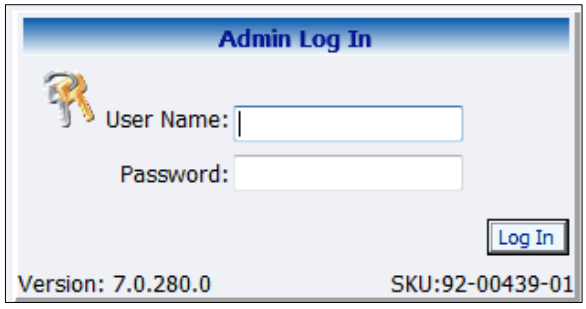
   Figure 14. Address bar

   Or
   - Type the IP address in the Address bar (Figure 15) and press **Enter**.

   Figure 15. IP address

   - The Admin Log In window appears (Figure 16).

   Figure 16. Admin Log In window

4. Type the **User** name and **Password**.

   IMPORTANT! The setting to log in for the first time, defaults to the user name admin and the

password admin.
System administrators should previously configure all user names and passwords for those who they allow to log on to the system.

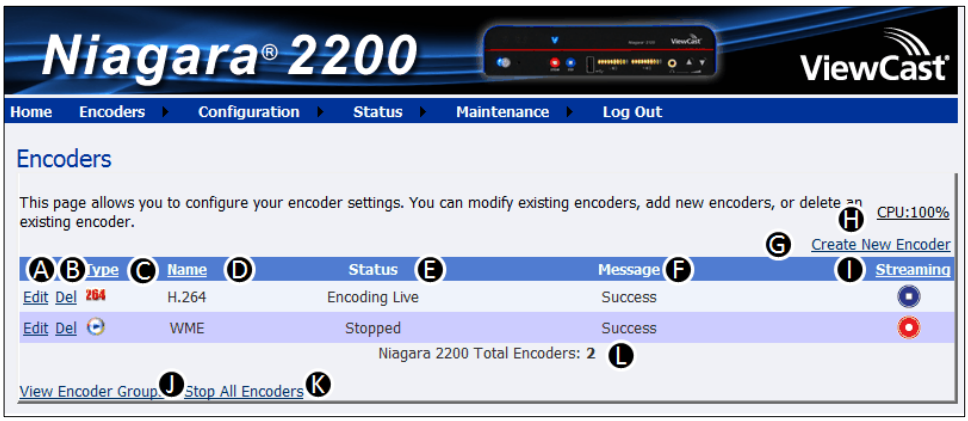
5. Press **Login**. The Niagara 2200 **Welcome** window and **Menu Bar** appear (Figure 17).

Figure 17. Welcome window

Viewing all encoders

The Encoders window provides a list of all of the encoder profiles loaded on the Niagara 2200. On the home page, click **Encoders ➢ All Encoders.**

Figure 18. Encoders window



A	Click this link to edit the encoder properties, streaming settings, and advanced streaming settings.
B	Click this link to delete an encoder from the list.
C	Displays the encoder type. Click this link to sort the encoders by type.
D	Displays the name you assigned to the encoder. Click this link to sort the encoders by name.
E	Displays the status of the encoders.
F	Displays the status of the last action.
G	Click this link to create a new encoder.
H	Displays the CPU usage. Click this link to open the System Configuration window.
I	Displays as either Started (blue circle button) or Stopped (red circle button) as the options for streaming this encoder. The encoder can be started or stopped by clicking the icons. Click this link to sort the encoders by what is streaming and what is not.
J	Click this link to view encoder groups.
K	Click this link to stop all encoders.
L	Displays the total number of encoders

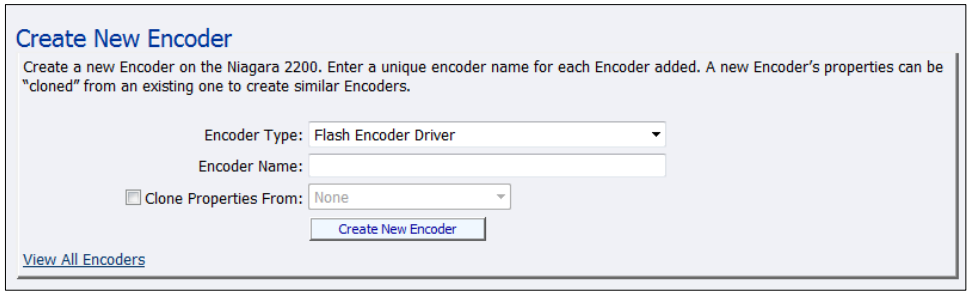
Creating an encoder

To create an encoder, on the home page click Encoders.

To create an encoder:

1. Click the **Create New Encoder** link. The Create New Encoder window displays (Figure 19).

Figure 19. Create New Encoder window



2. Select the **Encoder Type** from the drop-down list.
3. Enter the name of the encoder.

   Note: Valid characters are alphanumeric, space, dash, and dot.
4. To use the same properties from another encoder, enable **Clone Properties From**.
5. Select the encoder from the drop-down list.
6. Click **Create New Encoder**.

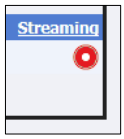
Starting an encoder

To start an encoder, on the home page click **Encoders ➢ All Encoders.**

To start an encoder:

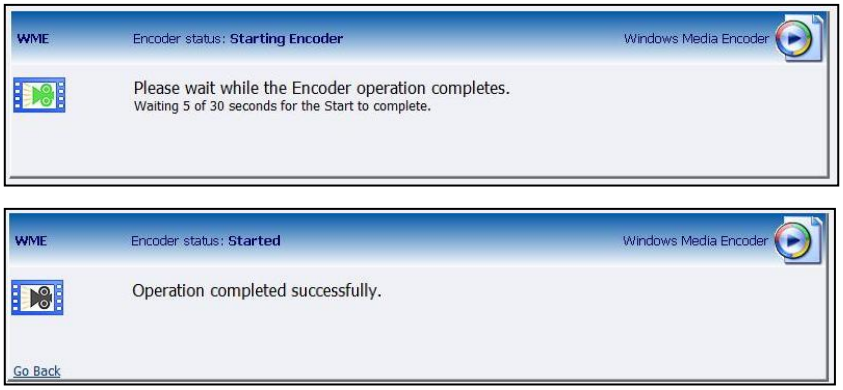
1. Click the red circle **Stopped** icon (Figure 20) in the Streaming column for the encoder you want to start streaming.

Figure 20. Stopped Icon



Messages appear detailing the encoder start progress (Figure 21).

Figure 21. Encoder Start Status



The Encoders window appears with the encoder status updated and the streaming indicator changes to a blue circle **Started** icon (Figure 22).

Figure 22. Encoders window

Starting an encoder with the stream button

Use the **Stream** button on the front panel to start the assigned encoder group.

To start an encoder with the stream button:

1. Press **Stream**

.

   The video encoding status blue light displays (**V**) to indicate a positive video stream and the audio meters display to indicate positive audio tracking.

WARNING! Limitations exist for the number of streams you can encode simultaneously. If you attempt to encode more streams than the Niagara 2200 can process simultaneously, the streams drop frames and the video stutters. This results in a poor viewer experience. If you fail to reduce the number of sessions to reduce CPU load, all encoding sessions may self-terminate without warning.

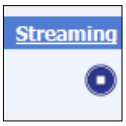
Stopping an encoder

To stop an encoder, on the home page click **Encoders ➢ All Encoders.**

To stop an encoder:

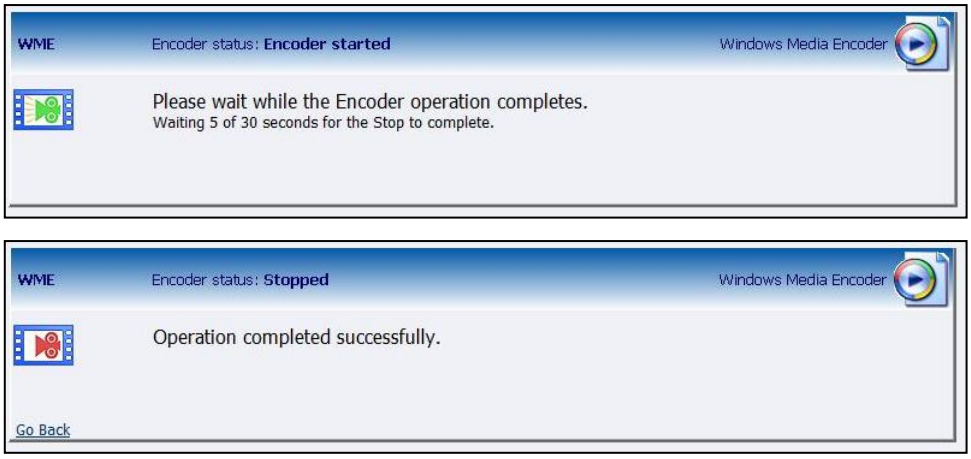
1. Click the blue **Started** icon of the encoder you wish to stop streaming (Figure 23).

Figure 23. Started Icon



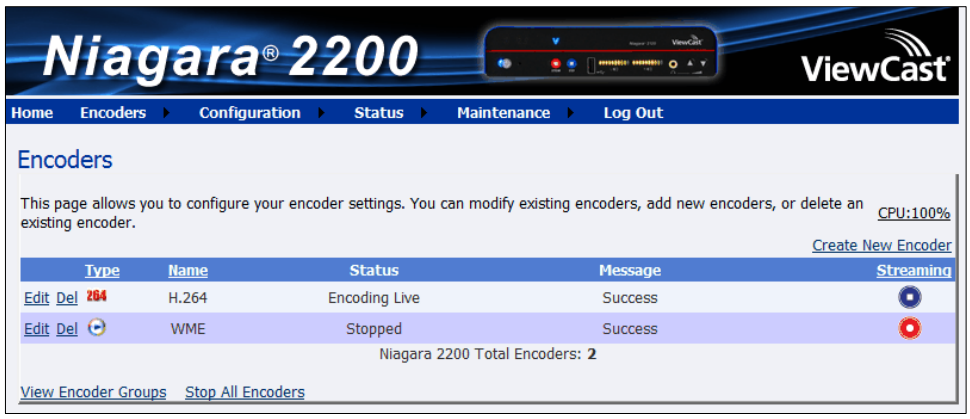
2. Messages appear detailing the encoder stop progress (Figure 24).

Figure 24. Encoder Stop Status



The Encoders window appears with the encoder status updated to reflect the **Stopped** mode and the streaming indicator changes to a red circled **Stopped** icon (Figure 25).

Figure 25. Encoders window



Stopping an encoder with the stop button

To start an encoder with the stream button:

1. Press **Stop**

.

   The Niagara 2200 browser displays the list of encoders and shows the status of each session.

Shutting down

To shut down:

1. Briefly press **Power** on the front panel.

   The Niagara 2200 front panel status light starts blinking and turns off once it is ready to stop streaming.

   The Niagara 2200 powers off after a few seconds.

CAUTION: Allow the Niagara 2200 to power down normally. If you force the system to shut down improperly, it can corrupt your data. If so, the next time you start the system, it may take several minutes to complete startup.

Advanced Operations

Advanced operations include but are not limited to the following:

- Editing a Flash encoder
- Editing an MPEG encoder
- Editing a WME encoder
- Streaming to a TS container

Adobe Flash H.264 encoder

When you create a new encoder, the Encoder Properties window appears. The Encoder Properties windows for editing a new encoder or an existing encoder are identical. You must configure the audio and video settings for each encoder type.

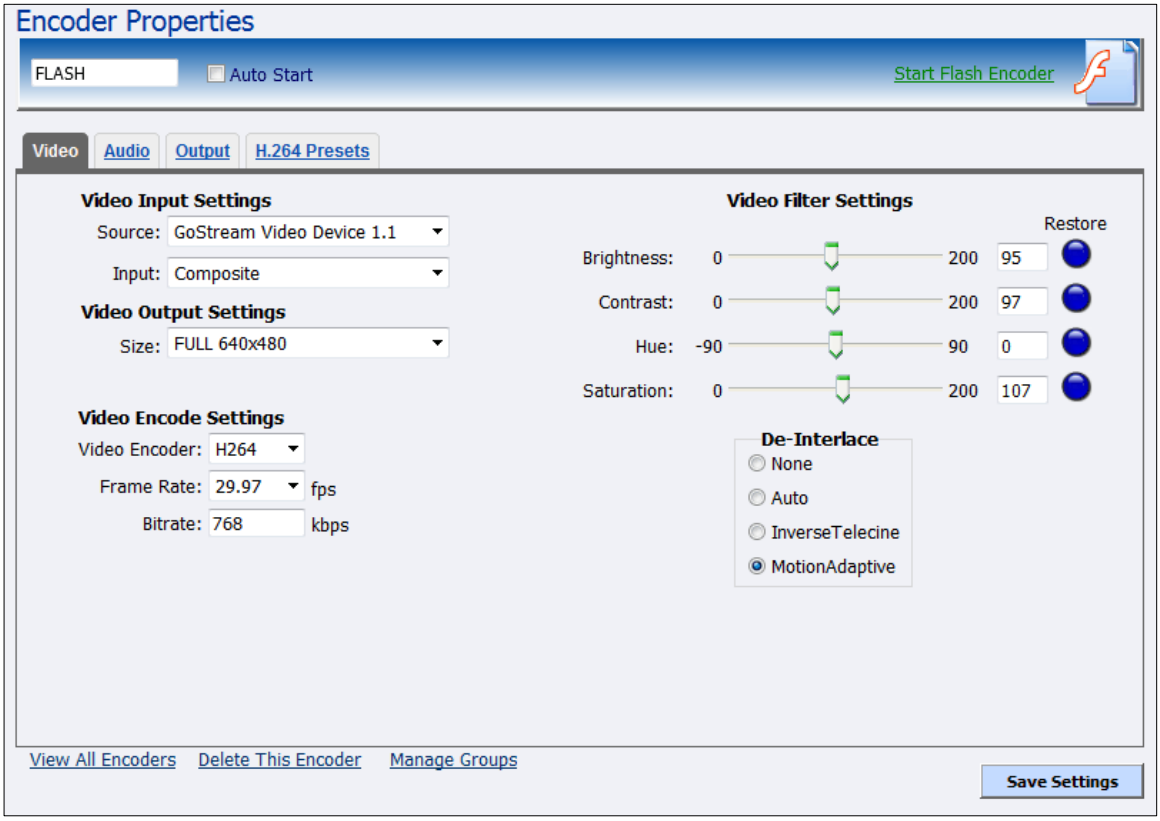
Use the Video, Audio, Output, and H.264 Presets tabs to edit the settings. Configure the video and audio settings, then the streaming properties. The streaming properties and advanced streaming settings are different for each type of encoder.

From the Flash Encoder Properties window (Figure 26), you can set the encoder to start streaming automatically by clicking the **Auto Start** check box. You can also start the encoder from this window by clicking the **Start Flash Encoder** link in the top right corner of the window.

Click **Encoders ➢ All Encoders** from the home page. Then select the **Edit** link next to the encoder whose properties you wish to modify. The system displays the Encoder Properties window for the selected encoder.

> *IMPORTANT! If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

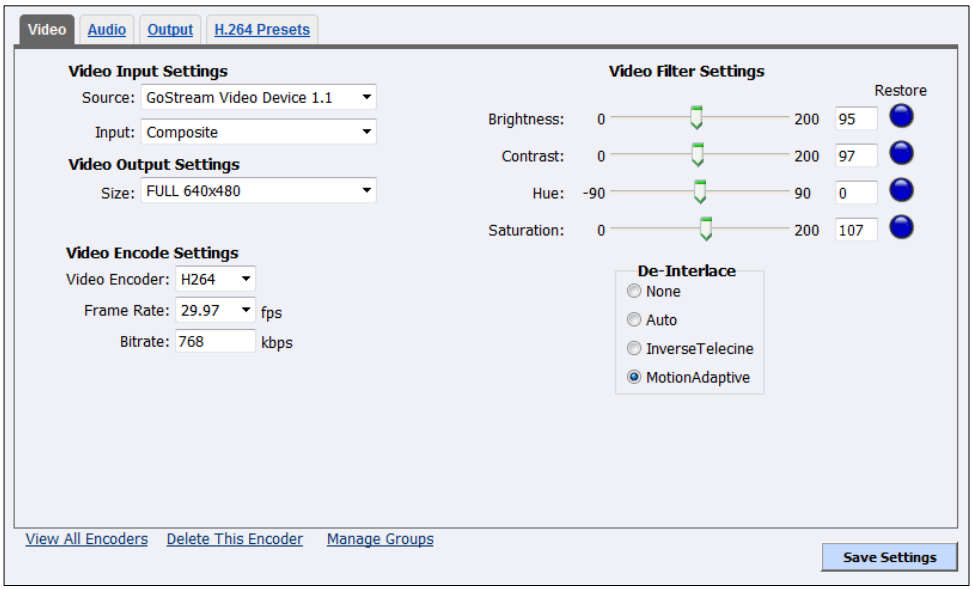
Figure 26. Flash Encoder properties



Video tab

Use the following table to configure the video analog input settings for a Flash encoder.

Figure 27. Video tab



To configure video input settings:

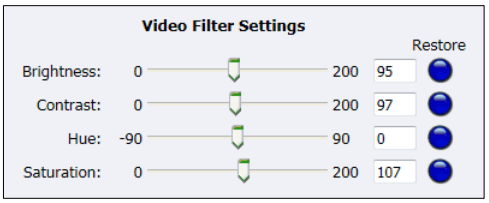
1. Select the video input **Source** from the drop-down list.
2. In the **Input** field, select the video input.
   IMPORTANT! The video input must match the connectors on the back of the system and your video source.
3. In the **Size** field, select the pre-determined size of the encoded video from the drop-down list.
   You can also specify a custom size for your video. This customization is useful when you are capturing video to be played on a mobile video-device that requires a non-standard size for compatibility.
   When you click **Custom**, two additional fields appear so you can enter the exact size you want the resulting video to be (Figure 28).

   Note: The size in the Width and Height fields must be divisible by 2.

   Figure 28. Custom fields

4. Select the **Video Encoder** from the drop-down list.
5. Enter the frames per second in the **Frame Rate** field.
6. Enter the **Bitrate**.
7. Drag the sliders to adjust the **Brightness**, **Contrast**, **Hue**, and **Saturation** (Figure 29).

   Figure 29. Video Filter settings

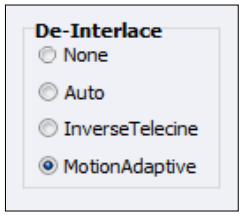


*Note: Click **Restore** to the right of the filter to reset the settings to the default.*

8. Click the **De-Interlace** setting you want to apply (Figure 30). Options include:

   - **None**
     – Performs no de-interlacing of any kind.
   - **Auto**
     – Applies inverse telecine de-interlacing to all telecine video.
     – Applies motion adaptive de-interlacing to all video that is not telecine.
     – Switches dynamically between the two modes as the content changes.
     – Available for NTSC video only.
   - **Inverse Telecine**
     – Drops the redundant fields and reassembles the video in a 24 fps progressive format.
     – Applies inverse telecine de-interlacing to all telecine video.
     – Performs no de-interlacing of video that is not telecine.
     – Available for NTSC video only.
   - **Motion Adaptive**
     – Is an algorithm for de-interlacing pure video (non-telecine) content.
     – Applies motion adaptive interlacing to all video. It detects which portions of the image are still and which portions are in motion then applies different processing to each scenario.

Figure 30. De-Interlace settings

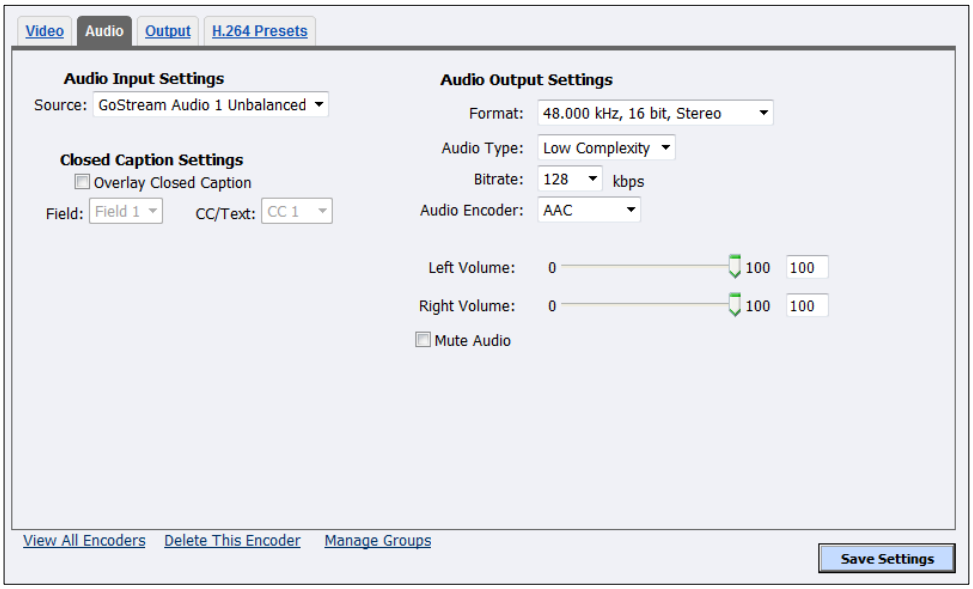


*Note: Telecine and inverse telecine only apply to NTSC video. They are not for PAL and SECAM video. The system disables **Auto** and **Inverse Telecine** choices when you select either **PAL** as the video standard.*

9. Click **Save Settings**.

Audio tab

Figure 31. Audio tab



To configure audio settings:

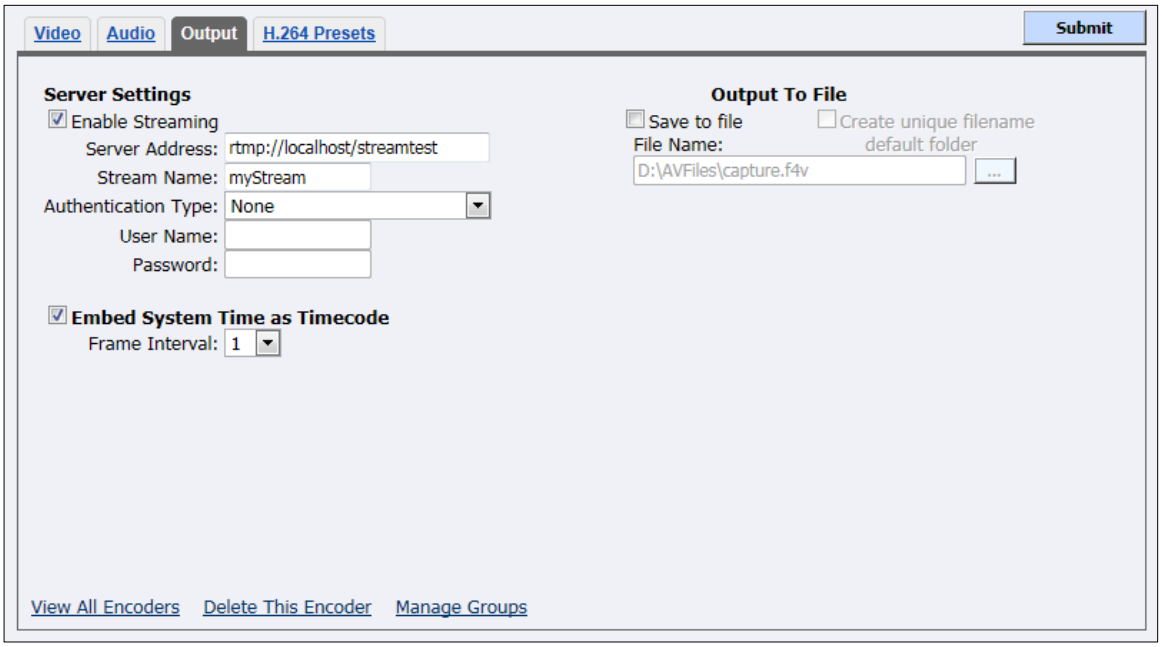
1. In the **Source** field, select an audio source from the drop-down list.

   IMPORTANT! The audio input must match the source connected to the back of the system and your audio source.

2. Select the **Overlay Closed Caption** check box to enable overlay closed captions. Field 1 CC 1 is the default setting.
3. Click the **Audio Format** from the drop-down list.
4. Click the **Audio Type** from the drop-down list.
5. Click the **Audio Encoder**.
6. Click the **Bitrate**.
7. Drag the sliders to adjust the **Left Volume** and **Right Volume**.
8. (Optional) Click the **Mute Audio** check box to mute audio.
9. Click **Save Settings**.

Output tab

Figure 32. Output tab



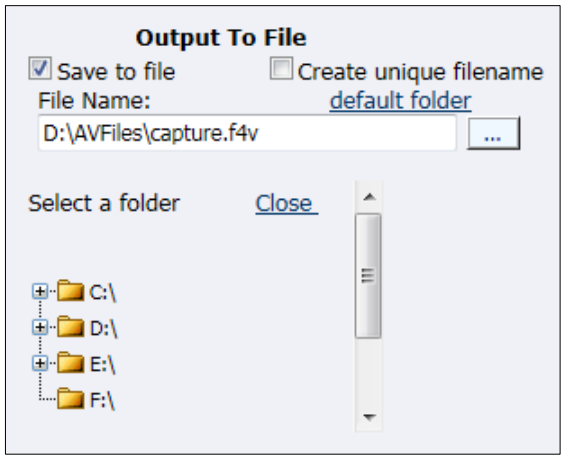
To configure output settings:

1. Click the **Enable Streaming** check box to enable live Flash streaming.
2. Enter the proper IP address in the **Server Address** field.
3. Enter the **Stream Name**.
4. Select the **Authentication Type** from the drop-down list. Options are available for streaming directly to Adobe, Akamai, and Limelight CDNs.
5. Enter the User Name and Password.
6. Click the Embed System Time as Timecode checkbox.
7. Click the Frame Interval.
8. Enable **Save to File** to save the encoded content to a file. Each time you start this encoder, the system overwrites the previous file.

   *Note: You must **Enable Streaming** or **Save to File.** If both **Enable Streaming** or **Save to File** are disabled, the encoder will not start and an error is generated.*
9. Select **Create unique file** to create a file that the system does not overwrite.
10. Accept the default location that displays in the **File Name** field or choose your own location for the file. To choose your own personal location click the link (horizontal ellipses or …) to the right of the File Name field and display the options (Figure 33).

    Note: By default, the system sets this folder to D:\AVFiles\Out\ with a default filename of capture.f4v.

    Figure 33. Select a folder



WARNING! You can only save media files to drive D. Check drive properties for available free space to determine your storage capacity.

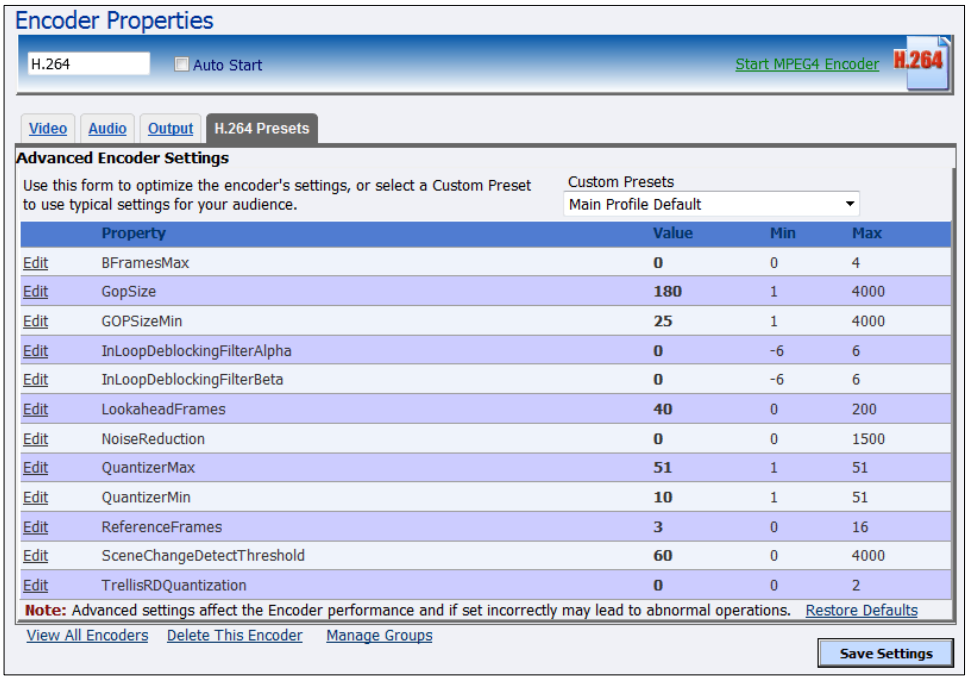
A better practice would be to use the Flash media server to save a file or to save it to a remote drive. If you inadvertently fill all available space, you risk losing your stream during a streaming event.

11. Click **Save Settings**.

H.264 presets tab

These advanced settings affect the way the encoder performs and if set incorrectly may lead to abnormal encoder operations (Figure 34). Each preset contains properties that you can modify. Refer to *Appendix B* for suggested values for the type of video you are streaming.

Figure 34. H.264 presets tab



To configure H.264 presets:

1. Click **Edit** next to the setting you want to modify.

   IMPORTANT! These advanced settings affect the way the Encoder performs and if set incorrectly may lead to abnormal encoder operations. Refer to ***Error! Not a valid result for table.*** *for suggested values for the type of video you are streaming.*
2. Change the value.
3. Click **Update**.
4. Click the **Restore Defaults** link at the bottom of the window to return the settings to the defaults.

   Note: The database has seven profiles. Clicking ***Restore Defaults*** *for one profile will change all profiles back to the default settings.*
5. Click **Save Settings**.

MPEG4 encoder

To create an encoder, **Encoders** ➢ **All Encoders** ➢ **Create New Encoder** link ➢ **Encoder Name** field.

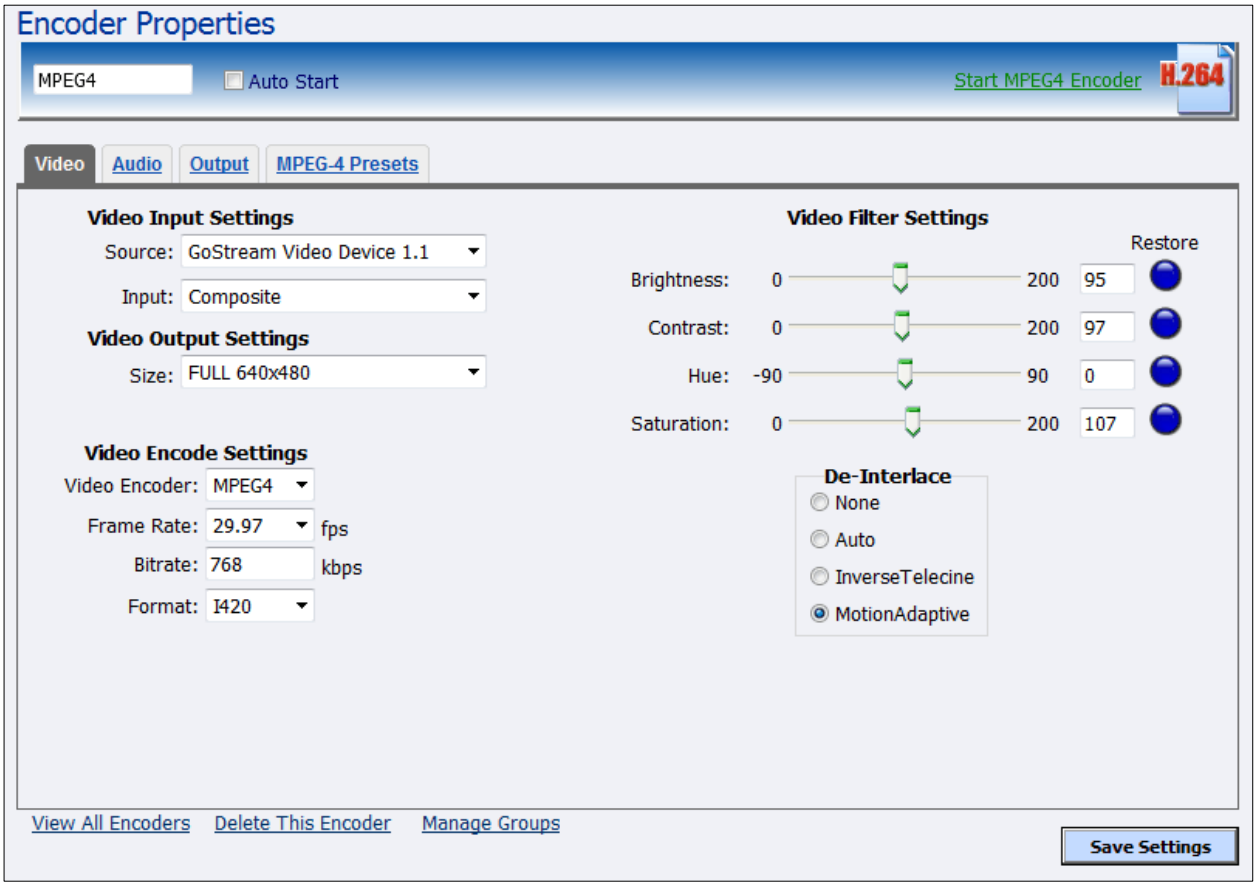
When you create a new encoder, the Encoder Properties window appears. The steps for editing a new encoder or an existing encoder are identical. You must configure the video and audio settings for each encoder type.

Use the Video, Audio, and Output tabs to edit the settings. Begin with configuring the video and audio settings, then the server and destination settings. The server and destination settings are different for each type of encoder.

From the Encoder Properties window (Figure 35), you can set the encoder to start streaming automatically by selecting the **Auto Start** check box. You can also start an encoder from this window by clicking the **Start MPEG4 Encoder** link in the top right corner of the window.

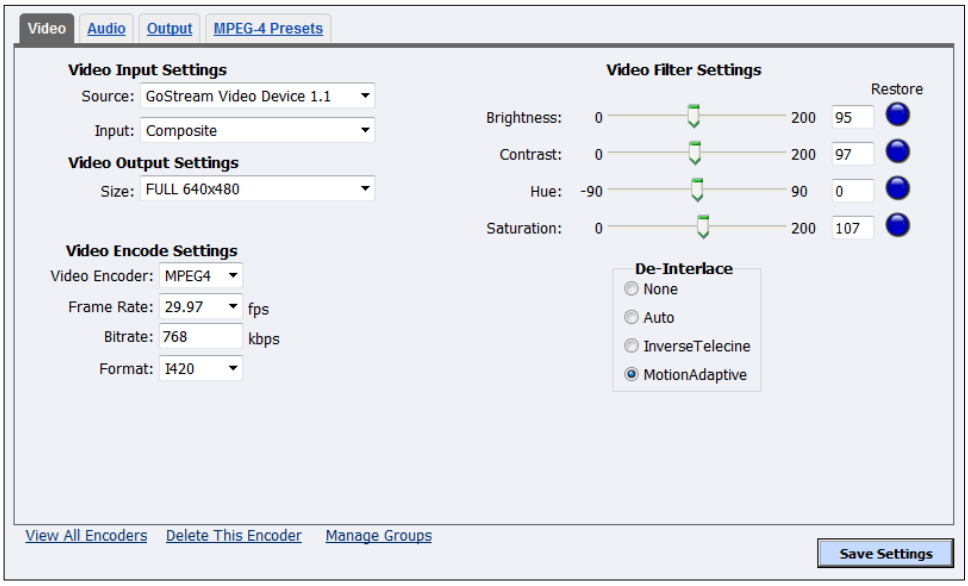
*IMPORTANT! If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

Figure 35. MPEG4 encoder



Video tab

Figure 36. Video tab



To configure video settings:

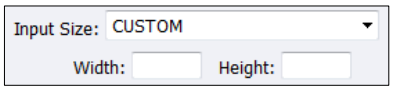
1. Select the video input **Source** from the drop-down list.
2. In the **Input** field, select the video input.

   IMPORTANT! The video input must match the connectors on the back of the system and your video source.

3. In the **Size** field, select the pre-determined size of the encoded video from the drop-down list. You can also specify a custom size for your video. This customization is useful when you are capturing video to be played on a mobile video-device that requires a non-standard size for compatibility.
   When you click **Custom**, two additional fields (Figure 37) appear so you can enter the exact size you want the resulting video to be.

   *Note: The size in the **Width** and **Height** fields must be divisible by 2.*

   Figure 37. Custom fields

   IMPORTANT! Ensure all of the encoders using the same video Proportion and Size settings also use the same Video and Audio Source settings. For example, all encoders capturing at Standard proportion and CIF size are set to Video Device 1.1 while encoders capturing at Standard proportion but QCIF resolution are set to Video Device 1.2.

4. Click the type of **Video Encoder** for Internet video, mobile phones, set top boxes, and create media files for other MPEG-4 compatible devices such as iPods according to the Motion Picture Expert Group (MPEG) types (refer to Table 1 and Table 2).

IMPORTANT! Choose the container type (MP4, TS, 3GP, and 3G2) on the Output tab.

If you select MPEG4 from the drop-down list, the MPEG-4 Presets tab displays (see *MPEG-4 Presets tab*). The fields on the Video, Audio, and Output tabs will change depending on the type of video encoder you select.

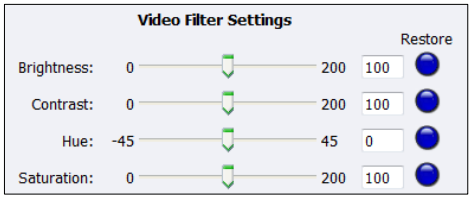
See TS Container for steps on streaming to a TS container.

5. Enter the frames per second in the **Frame Rate** field.
6. Enter the kilobits per second in the **Bitrate** field.
7. In the **Format** field, indicate the color space format.

*IMPORTANT! If you specify a video size incompatible with the color space of your source video, the system will automatically correct the size to the closest compatible setting when you click **Save Settings**.*

8. Drag the sliders to adjust the **Brightness**, **Contrast**, **Hue**, and **Saturation** (Figure 38).

Figure 38. Video filter settings

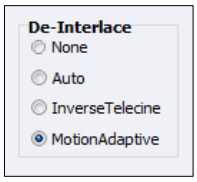


*Note: Click **Restore** to the right of the filter to reset the settings to the default.*

9. Click the **De-Interlace** setting you want to apply (Figure 39). Options include:

- **None**
  – Performs no de-interlacing of any kind.
- **Auto**
  – Applies inverse telecine de-interlacing to all telecine video.
  – Applies motion adaptive de-interlacing to all video that is not telecine.
  – Switches dynamically between the two modes as the content changes.
  – Available for NTSC video only.
- **Inverse Telecine**
  – Drops the redundant fields and reassembles the video in a 24 fps progressive format.
  – Applies inverse telecine de-interlacing to all telecine video.
  – Performs no de-interlacing of video that is not telecine.
  – Available for NTSC video only.
- **Motion Adaptive**
  – Is an algorithm for de-interlacing pure video (non-telecine) content.
  – Applies motion adaptive interlacing to all video. It detects which portions of the image are still and which portions are in motion then applies different processing to each scenario.

Figure 39. De-Interlace settings



*Note: Telecine and inverse telecine only apply to NTSC video. They are not used for PAL and SECAM video. The system disables **Auto** and **Inverse Telecine** choices when you select either **PAL** as the video standard.*

11. Click **Save Settings**.

Table 1. MPEG encoder and container descriptions

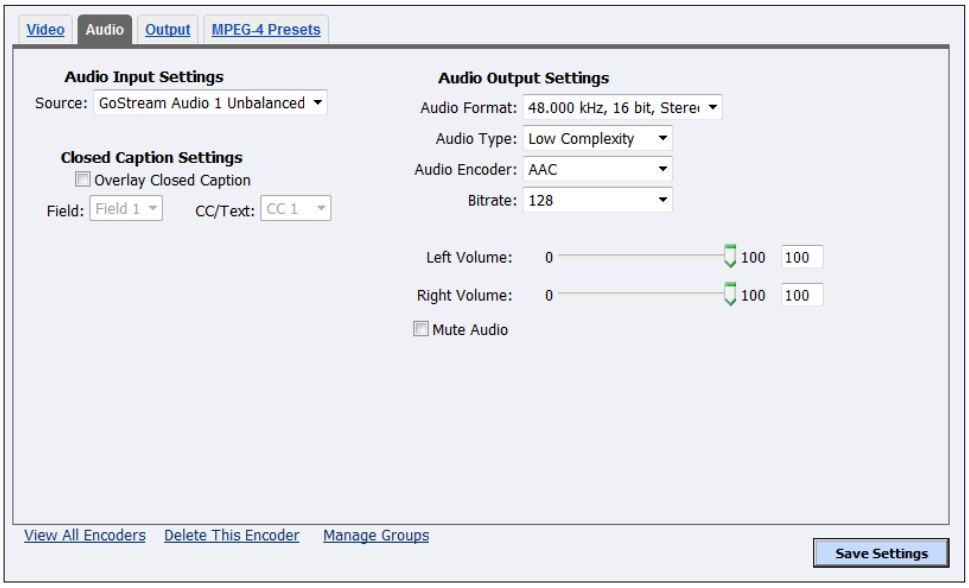
MPEG4 – MP4	MPEG-4 Part 2 is for situations where low bit rate and low resolution are mandated by other conditions of the applications, such as network bandwidth or device size. Examples of video applications for MPEG-4 are cell phones, some low-end video conferencing systems, and surveillance systems. MPEG-4 is important for legacy handheld devices that do not support H.264.
H264 – MP4	H.264, MPEG-4 Part 10, or AVC (Advanced Video Coding) was designed for high data compression while maintaining better quality than its predecessor, H.263. It also addresses a broad range of applications from low bit rate to high bit rate and from low resolution such as cell phones to high resolution such as broadcast.
MPEG2-TS	MPEG transport stream is a standard format for transmission and storage of audio, video, and Program and System Information Protocol (PSIP) data. It is used in broadcast systems such as DVB, ATSC and IPTV.
H.264-TS	H.264 encoding provided a MPEG-2 transport stream (TS) container.
The Third Generation Partnership Project (3GPP) defined 3GP as a multimedia container format for use on 3G mobile phones. It stores video streams such as MPEG-4 or H.264 and audio streams such as AAC. This format has two defined standards: • 3GPP for GSM-based mobile phones • 3GPP2 for CDMA-based mobile phones This setting creates an H.263 stream stored in a 3GPP container.	
H264 – 3GP	This setting creates an H.264 stream stored in a 3GP container.
H264 – 3G2	This setting creates an H.264 stream stored in a 3G2 container.
MPEG4 – 3GP	This setting creates an MPEG-4 stream stored in a 3GP container.
MPEG4 – 3G2	This setting creates an MPEG-4 stream stored in a 3G2 container.
H263 – 3GP	This setting creates an H.263 stream stored in a 3GP container.
H263 – 3G2	This setting creates an H.263 stream stored in a 3G2 container.

Table 2. Valid output container selections for video encoder types

Container	H.263 Video	MPEG-4 Video	H.264 Video	MPEG-2
MP4		✓	✓	
3GP	✓	✓	✓	
3G2	✓	✓	✓	
TS			✓	✓

Audio tab

Figure 40. Audio tab



To configure audio settings:

1. In the **Source** field, select an audio source from the drop-down list.
2. Select the **Overlay Closed Caption** check box to enable overlay closed captions. Field 1 CC 1 is the default setting.
3. Click the **Audio Format**.
4. Click the **Audio Type**. The drop-down list box provides two choices:
   - **Main** – The same as Low Complexity, but adds backward prediction.
   - **Low Complexity** – The simplest and most widely used and supports AAC audio format.
   - **HE-AAC V1** – Uses spectral band replication (SBR) to enhance the compression efficiency in the frequency domain.
   - **HE-AAC V2** – Enhances the compression efficiency of stereo signals.

   Note: Depending on the player on which the resulting stream will be heard, either choice will use a specific set of tools to encode the audio stream. Make your choice based on the requirement of the playback software or device. The most widely supported format is the Low Complexity profile.
5. The default **Audio Encoder** is AAC (Advanced Audio Coding) – a standardized, lossy compression and encoding scheme for digital audio. AAC achieves better audio quality than MP3. AAC and MP3 are MPEG standards.

   Note: MPEG-2 uses MP2 at Low Complexity only.
6. Click the **Bitrate**.
7. Drag the sliders to adjust the **Left Volume** and **Right Volume**.
8. (Optional) Select **Mute Audio** to silence audio.

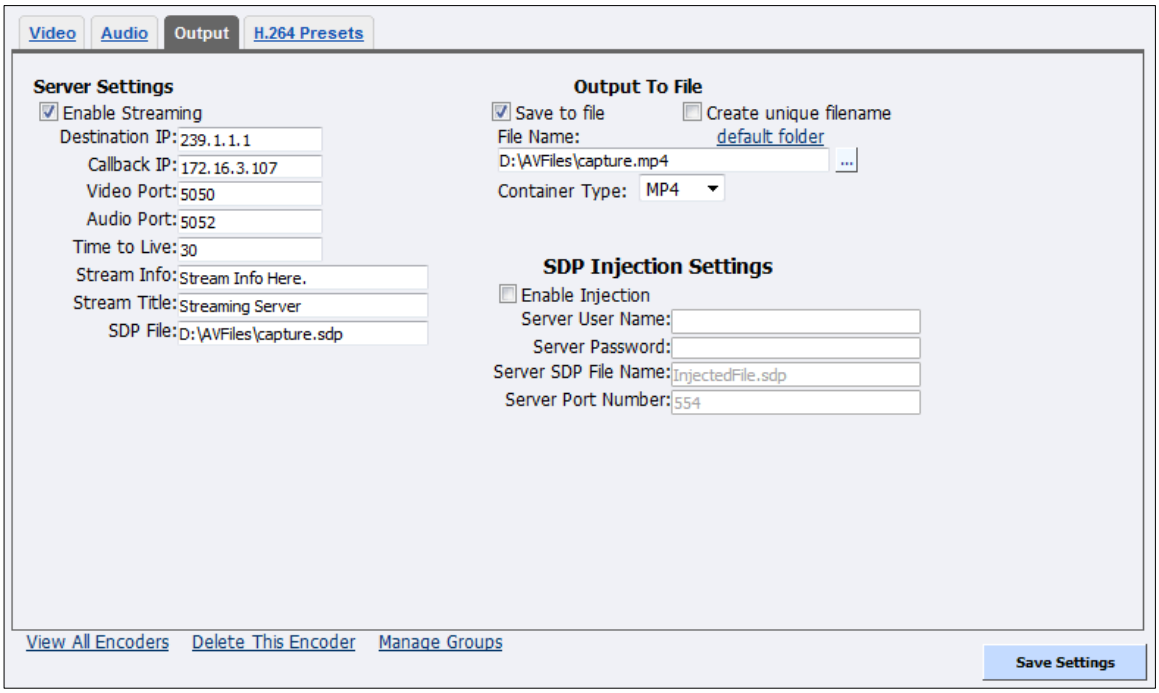
9. Click **Save Settings**.

Output tab

Use the following table to configure the output settings for an MPEG4 encoder.

Note: This tab is dynamic depending upon which encoder you select on the Video tab. The choices in the drop-down list may vary.

Figure 41. Output tab



To configure output settings:

1. Select **Enable Streaming** to stream your audiovisual content via RTSP.
2. Set the appropriate streaming properties.

   Note: The default settings will enable multicast streaming. If you do not want this setting, change the IP address for Group to the IP address of the server to which you want to stream from the encoder.

3. In the **SDP File** field, enter a name and a destination path for the resulting SDP file created when you start the stream. If you are streaming to a Helix, a QuickTime, or a Darwin server, refer to its respective documentation or online message boards for setup details specific for the individual streaming server.

   Note: You can stream point-to-point by selecting a share destination directory for the saved SDP file. Remember to disable multicasting by entering in the IP address of the PC to which you want to stream.

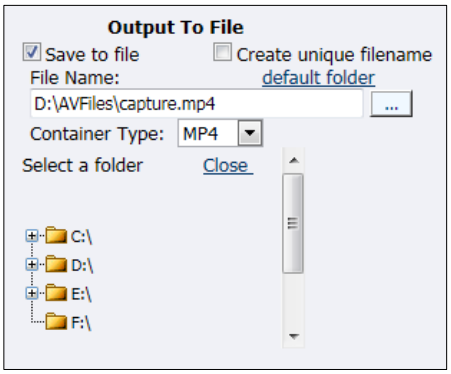
   For example, if you want another PC to view the stream, save the SDP file to a share folder on the local drive. The other PC can open the SDP file and the stream can be played in a QuickTime or other MPEG-4 compatible streaming player. Since MPEG-4 encoding can be CPU intensive, it is not recommended that you view the stream on the same system as the Niagara SCX encoder unless you have a powerful system (dual-core processors or better). Doing so may overtax the host CPU, which will cause video quality

degradation and encode session failure.

4. Select **Save to File** to save the encoded content to a file. Each time you start this encoder, the system overwrites the previous file.
5. Select **Create unique file** to create a file that the system does not overwrite.
6. Accept the default location that displays in the **File Name** field or choose your own location for the file (Figure 42). To choose your own personal location select the link (horizontal ellipses or …) to the right of the **File Name** field and display the options.

*Note: By default, the system sets this folder to **D:\AVFiles** with a default file name of **capture.mp4**.*

Figure 42. Select a folder



WARNING! You can only media files to drive D. Check drive properties for available free space to determine your storage capacity.

A better practice would be to use the streaming server to save a file or to save it to a remote drive. If you fill all available space, you risk losing your stream during a streaming event.

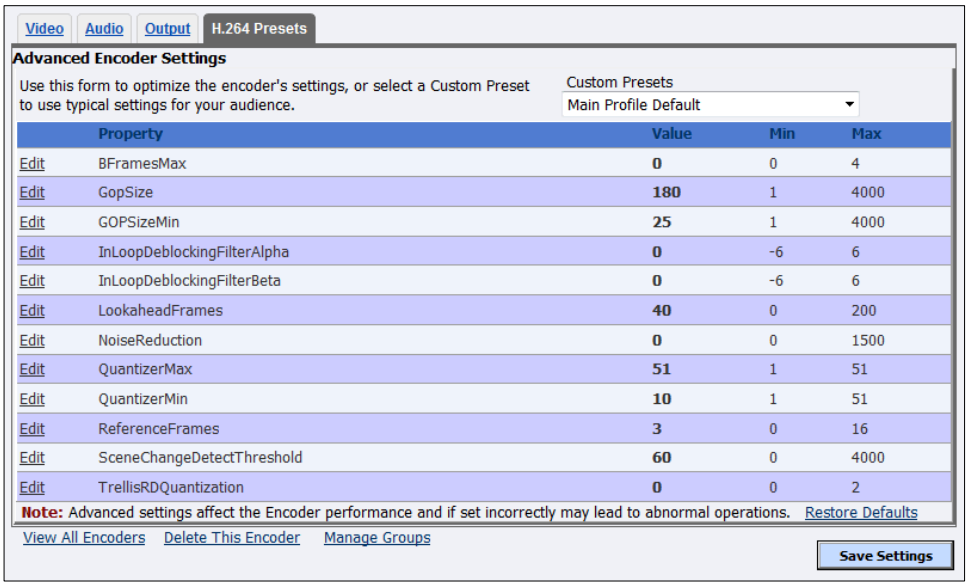
7. Click the **Container Type**.
8. Select **Enable Injection** to inject and SDP file onto your server.
9. Enter the username and password.
10. Enter the **Server SDP File Name**.
11. Enter the **Server Port Number**.
12. Click **Save Settings**.

H.264 Presets tab

Each preset contains properties that you can modify. Use the following table to configure the H.264 presets analog input settings for an MPEG4 encoder.

Note: The choices in the drop-down list may vary.

Figure 43. H.264 Presets tab



To configure H.264 presets:

1. Click **Edit** next to the property you want to modify.

   IMPORTANT! These advanced presets affect the way the encoder performs and if set incorrectly may lead to abnormal encoder operations. Refer to the H.264 Presets section for suggested values for the type of video you are streaming.

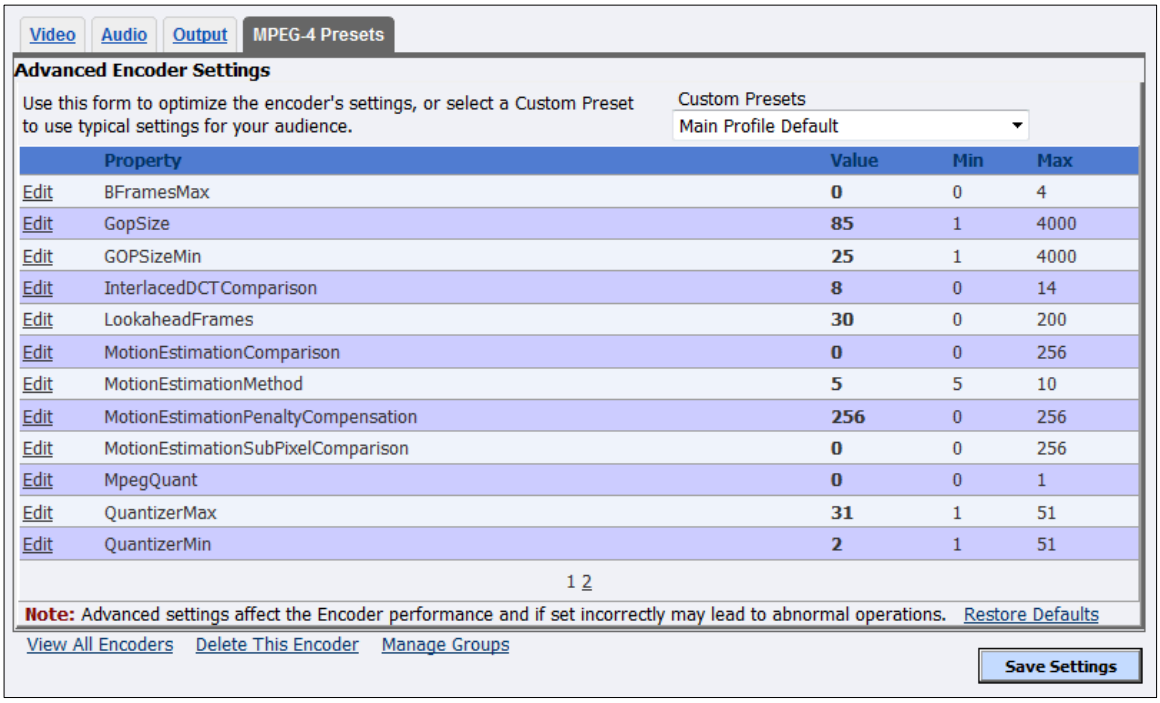
2. Change the **Value**.
3. Click **Update**.
4. Click the **Restore Defaults** link at the bottom of the window to return the settings to the default.

   *Note: The database has multiple properties for each preset. Clicking **Restore Defaults** for one property will change all properties to the default settings.*

MPEG-4 Presets tab

Each preset contains properties that you can modify.

Figure 44. MPEG-4 Presets tab



To configure MPEG-4 presets:

1. Click **Edit** next to the property you want to modify.

   IMPORTANT! These advanced presets affect the way the encoder performs and if set incorrectly may lead to abnormal encoder operations. Refer to the H.264 Presets section for suggested values for the type of video you are streaming.

2. Change the **Value**.
3. Click **Update**.
4. Click the **Restore Defaults** link at the bottom of the window to return the settings to the default.

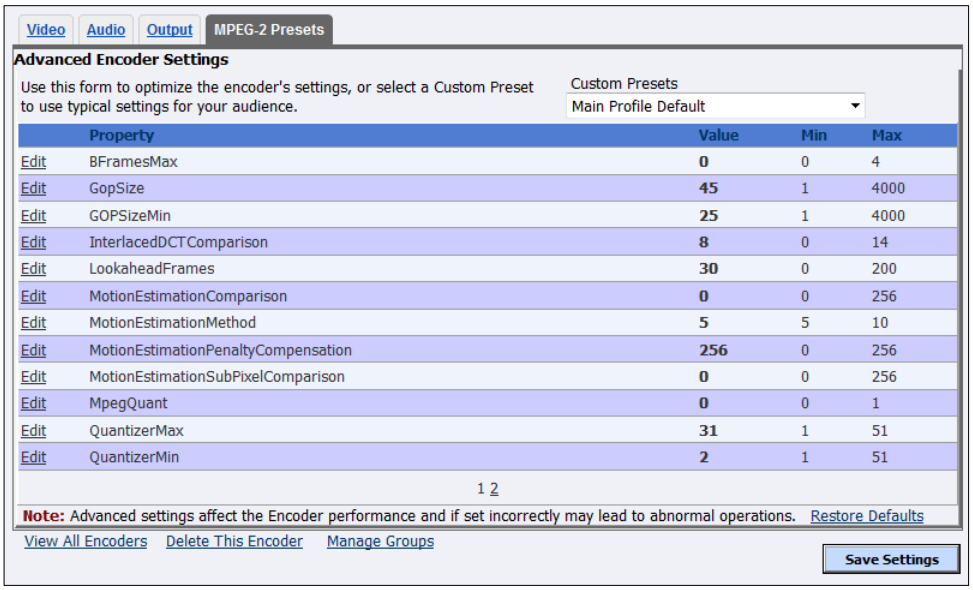
   *Note: The database has multiple properties for each preset. Clicking **Restore Defaults** for one property will change all properties to the default settings.*

MPEG-2 Presets tab

Each preset contains properties that you can modify. Use the following table to configure the MPEG-2 presets analog input settings for an MPEG2 encoder.

Note: The choices in the drop-down list may vary.

Figure 45. MPEG-2 Presets tab



To configure MPEG-2 presets:

1. Click **Edit** next to the property you want to modify.

   IMPORTANT! These advanced presets affect the way the encoder performs and if set incorrectly may lead to abnormal encoder operations. Refer to the H.264 Presets section for suggested values for the type of video you are streaming.

2. Change the **Value**.
3. Click **Update**.
4. Click the **Restore Defaults** link at the bottom of the window to return the settings to the default.

   *Note: The database has multiple properties for each preset. Clicking **Restore Defaults** for one property will change all properties to the default settings.*

Windows Media encoder

To create an encoder, **Encoders** ➢ **All Encoders** ➢ **Create New Encoder** link ➢ **Encoder Name** field.

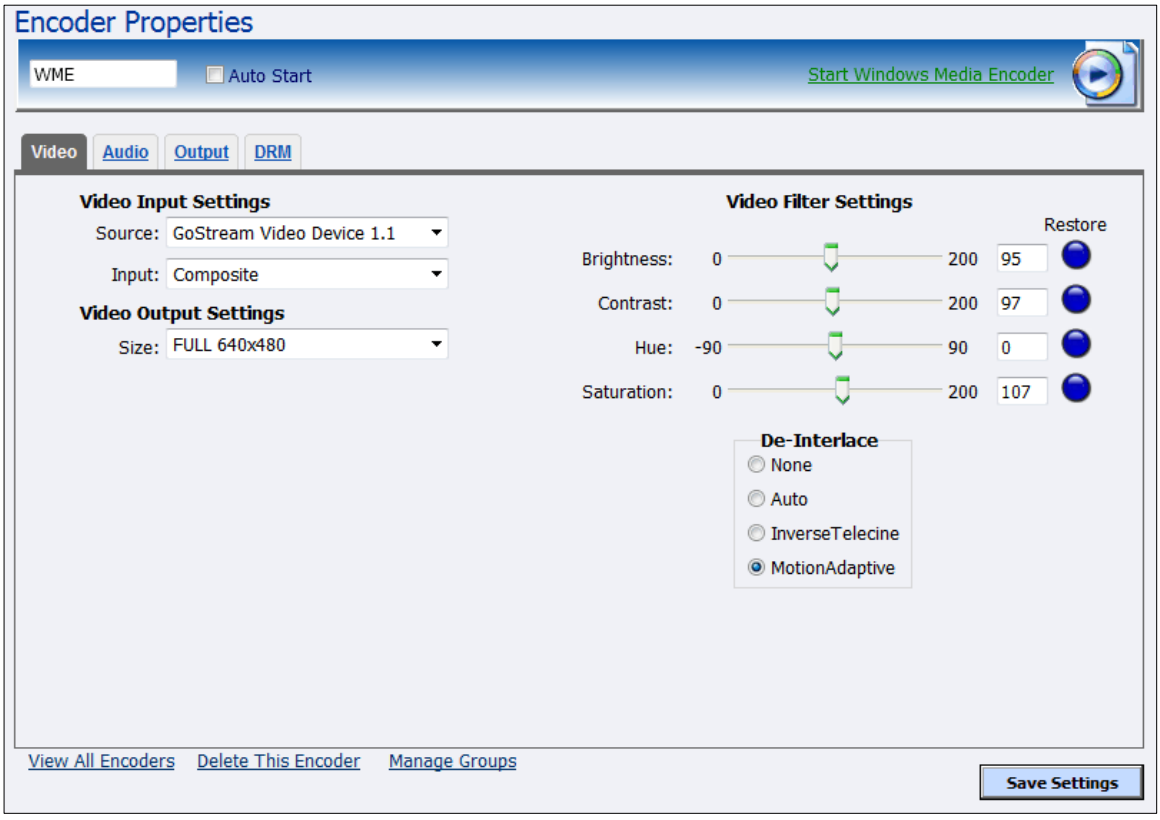
When you create a new encoder, the Encoder Properties window appears. The steps for editing a new encoder or an existing encoder are identical. You must configure the video and audio settings for each encoder type.

Use the Video, Audio, Output, and DRM tabs to edit the settings. Begin with configuring the video and audio settings, then the server and destination settings. The server and destination settings are different for each type of encoder.

From the Encoder Properties window (),you can set the encoder to start streaming automatically by selecting the **Auto Start** check box. You can also start an encoder from this window by clicking the **Start Windows Media Encoder** link in the top right corner of the window.

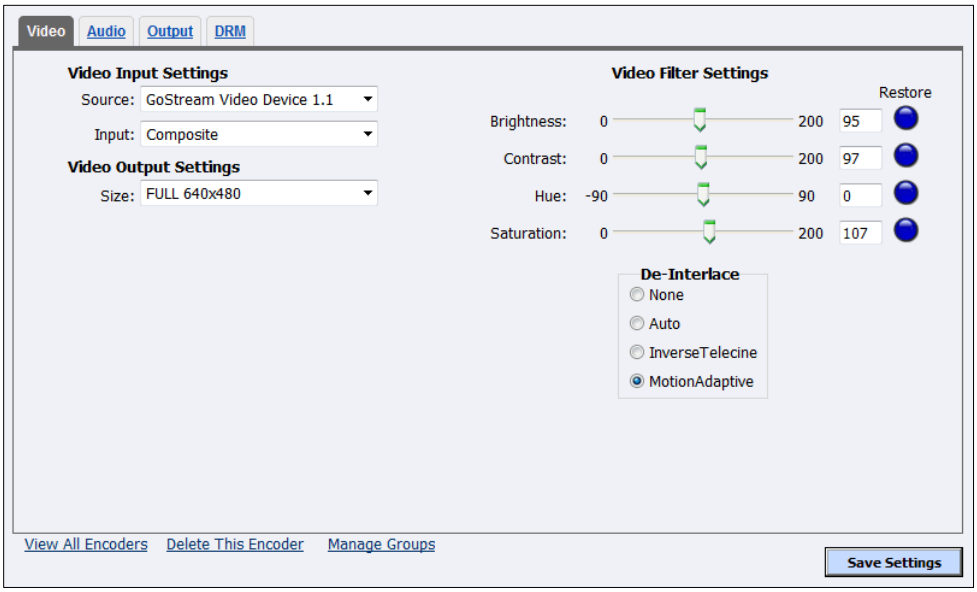
*IMPORTANT! If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

Figure 46. Windows Media encoder



Video tab

Figure 47. Video tab



To configure video settings:

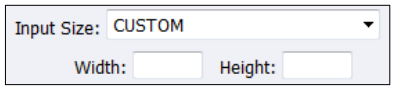
1. Select the video input **Source** from the drop-down list.
2. In the **Input** field, select the video input.

   IMPORTANT! The video input must match the connectors on the back of the system and your video source.
3. In the **Size** field, select the pre-determined size of the encoded video from the drop-down list. You can also specify a custom size for your video. This customization is useful when you are capturing video to be played on a mobile video-device that requires a non-standard size for compatibility.

   When you click **Custom**, two additional fields appear so you can enter the exact size you want the resulting video to be (Figure 48).

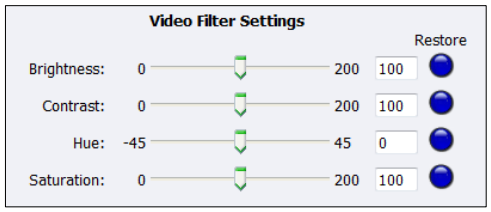
   *Note: The size in the **Width** and **Height** fields must be divisible by 2.*

   Figure 48. Custom fields

   IMPORTANT! Ensure all of the encoders using the same video Proportion and Size settings also use the same Video and Audio Source settings.
4. Drag the sliders to adjust the **Brightness**, **Contrast**, **Hue**, and **Saturation**.

   Figure 49. Video Filter Settings

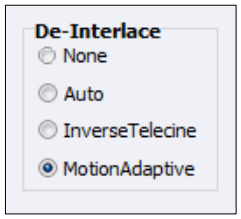


*Note: Click **Restore** to the right of each filter to return the setting to the default.*

5. Click the **De-Interlace** settings you want to apply (Figure 50). Options include:

- **None**
  – Performs no de-interlacing of any kind.
- **Auto**
  – Applies inverse telecine de-interlacing to all telecine video.
  – Applies motion adaptive de-interlacing to all video that is not telecine.
  – Switches dynamically between the two modes as the content changes.
  – Available for NTSC video only.
- **InverseTelecine**
  – Drops the redundant fields and reassembles the video in a 24 fps progressive format.
  – Applies inverse telecine de-interlacing to all telecine video.
  – Performs no de-interlacing of video that is not telecine.
  – Available for NTSC video only.
- **Motion Adaptive**
  – Is an algorithm for de-interlacing pure video (non-telecine) content.
  – Applies motion adaptive interlacing to all video. It detects which portions of the image are still and which portions are in motion then applies different processing to each scenario.

Figure 50. De-Interlace settings

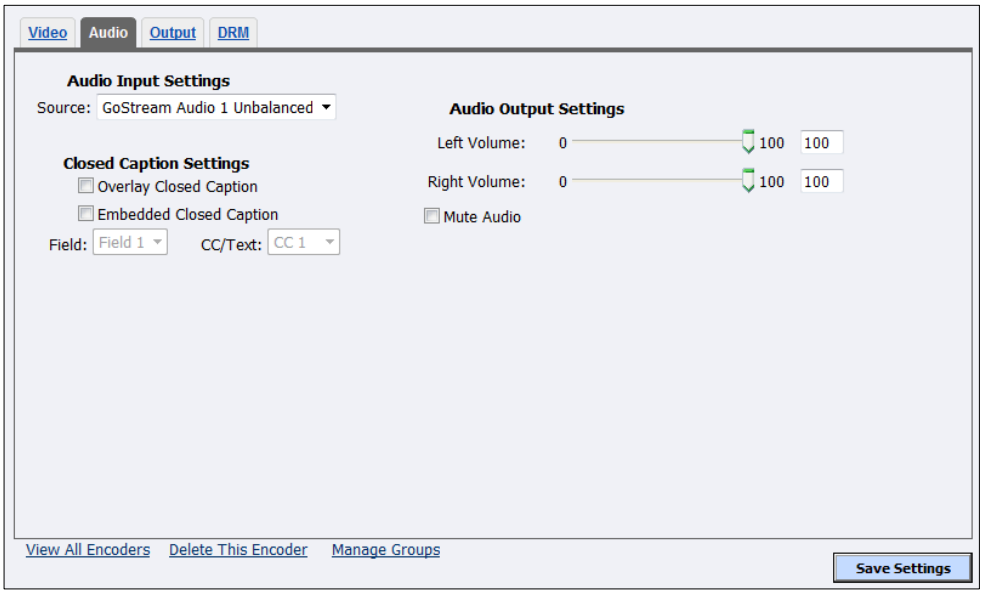


*Note: Telecine and inverse telecine only apply to NTSC video. They are not used for PAL and SECAM video. The system disables **Auto** and **Inverse Telecine** choices when you select either **PAL** as the video standard.*

6. Click **Save Settings**.

Audio tab

Figure 51. Audio tab



To configure audio settings:

1. In the **Source** field, select an audio source from the drop-down list.
2. Select the **Overlay Closed Caption** check box to enable overlay closed captions. Field 1 CC 1 is the default setting.
3. Select the **Embedded Closed Caption** to embed the closed captions.
4. Drag the slider to adjust the **Left Volume** and **Right Volume**.
5. (Optional) Select **Mute Audio** to silence audio.
6. Click **Save Settings**.

Output tab

Windows Media is both a storage format and a streaming format. In addition to the ability to output to a file, the Windows Media encoder can stream to a Windows Media Server. The settings for Windows Media encoder include the ability to set parameters for connecting and streaming to the server.

Some Windows Media Capture Profiles have pre-defined video resolutions and input selections. When you select a Windows Media Capture Profile, verify your current video and audio settings have not been modified. If they have been modified, simply change these settings back to their previous settings and click **Save Settings**.

When streaming audio and video, the two methods are pull and push.

Pull method

In the pull method, the system begins to generate broadcast packets as soon as you start as soon as you start the encoding. However, it does not deliver the broadcast stream until Windows Media Server requests the stream. This method does not provide a secure connection to the server and should only be used if the encoder and server reside within the same network firewall.

To enable clients to pull the stream from the Niagara system, set up a session and begin broadcasting directly from the system. Clients (Windows Media servers or players) can connect to the stream at any time. You can use mms or http scheme with either the IP address of DNS host name. For example:

http://encoding_computer_name:port

Push method

With the push method, the system maintains a secure connection to Windows Media Server. This connection allows it to pass a user name and password to authenticate access to the server.

http://IP_address:port/publishing point

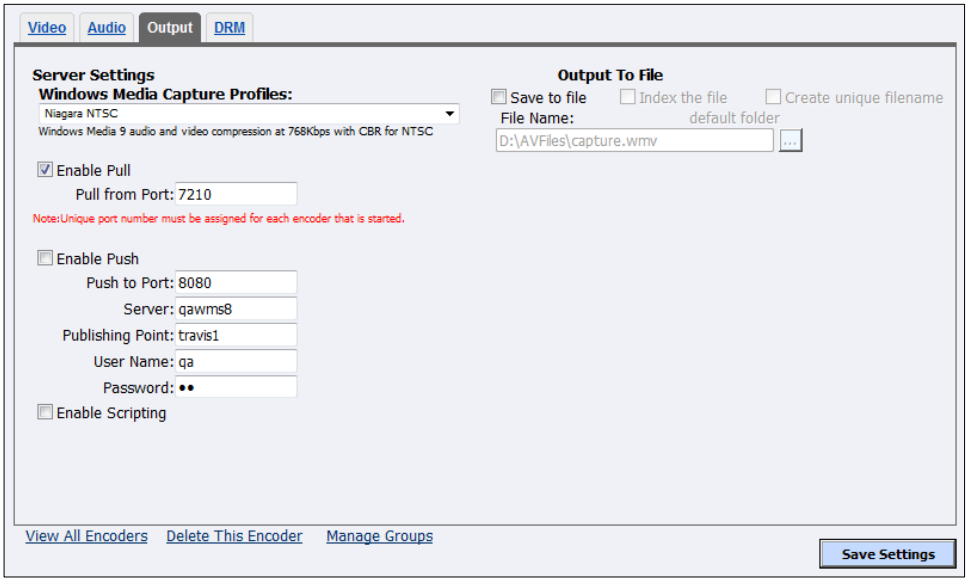
By default, the system supports up to 50 direct connections during a broadcast, but if you're sending to a lot of clients push to Windows Media Server. Use the pull method for testing. Use the push method for a wide distribution.

> *Note: The more direct connections to the system, the more system resources are required. ViewCast does not recommend directly connecting players to the system. Streaming servers should connect to the system and, in turn, players should connect to the servers.*

Use the following table to configure the output analog input settings for a Windows Media encoder.

> *Note: The choices in the drop-down list may vary.*

Figure 52. Output tab



To configure output settings:

1. Click on a **Windows Media Capture Profile** from the drop-down list.
2. Select **Enable Pull**.
3. Enter a port number that the server will use to pull the stream from the Niagara system.
4. Select **Enable Push**.

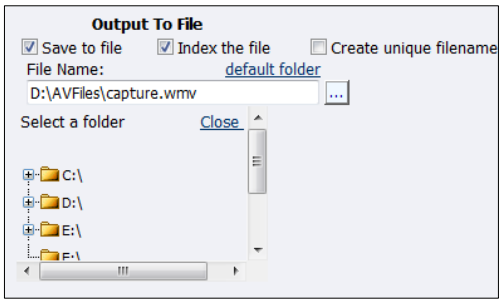
   IMPORTANT! Be sure to enter a port number not already assigned to another encoder. If two encoders attempt to use the same port number, one or both encoders will fail to start.
5. Enter a port number that the server will use to push the stream from the Niagara system.
6. Enter the **Server** name or IP address.
7. Enter the **Publishing Point**.

   Note: This field is optional.
8. Enter the **User Name**.
9. Enter the **Password**.
10. Select **Enable Scripting** to embed closed captions.

    Note: If closed captions is enabled through the Osprey driver, you cannot enable scripting.
11. You can either:
    - Select **Save to File** to save the encoded content to a file. Each time you start this encoder, the system overwrites the previous file.
    - Select **Index the file** to drag the slider to any point in your video capture.
    - Select **Create unique file** to create a file that the system does not overwrite.
12. Accept the default location that displays in the **File Name** field or choose your own location for the file. To choose your own personal location select the link (horizontal ellipses or …) to the right of the **File Name** field and display the options (Figure 53).

*Note: By default, the system sets this folder to **D:\AVFiles** with a default file name of **capture.wmv**.*

Figure 53. Select a folder



WARNING! You can only save media files to drive D. Check drive properties for available free space to determine your storage capacity.

A better practice would be to use the streaming server to save a file or to save it to a remote drive. If you fill all available space, you risk losing your stream during a streaming event.

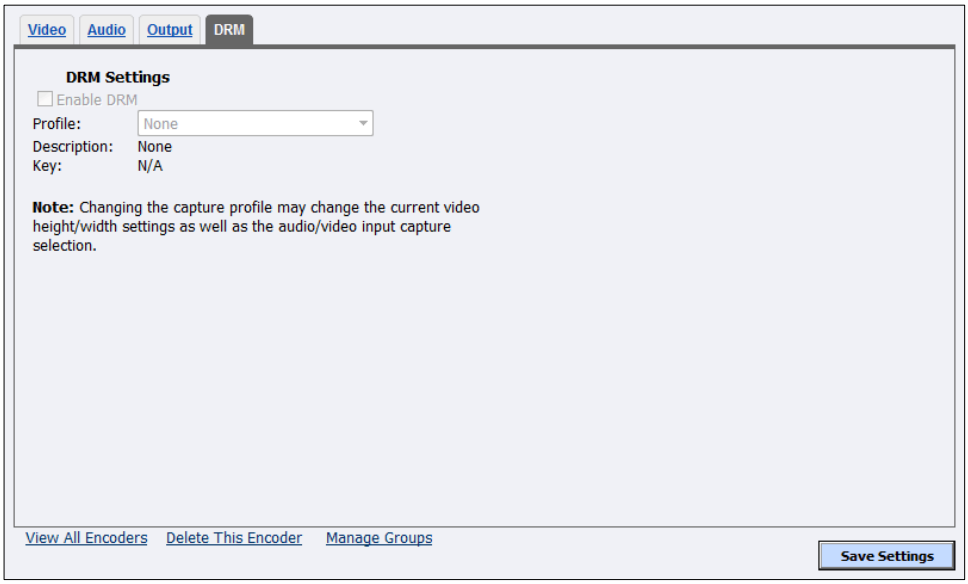
13. Click **Save Settings**.

DRM tab

You can protect your content using a technology called Digital Rights Management (DRM). Niagara SCX allows you to encrypt your content with DRM technology while you are encoding. You can apply DRM while encoding to a file and when broadcasting a stream. Users are required to obtain a license to play to content. This license contains the key to unlock the content and the rights that govern its use (Figure 54).

Refer to Appendix A on how to set up and import a DRM profile.

Figure 54. DRM tab



To configure DRM settings:

1. Select **Enable DRM**.
2. Click the **DRM Profile** you wish to apply from the drop-down list.

   *Note: When you enable DRM, Niagara SCX automatically changes the **Windows Media Capture Profile** setting to a **DRM-compatible Windows Media 9** setting. You may need to adjust this setting after you enable DRM.*

3. Click **Save Settings**.

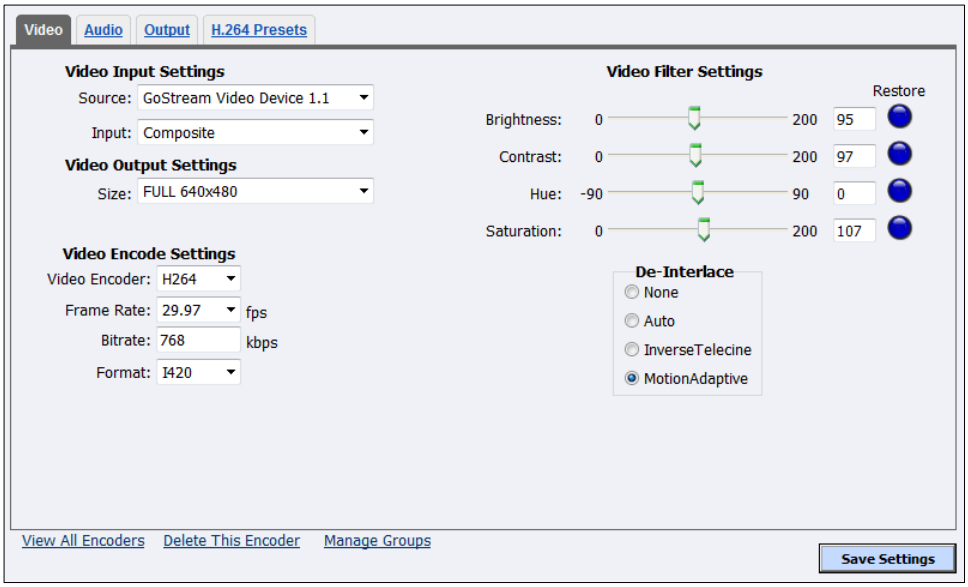
TS Container

When you configure an MPEG4 encoder you can select MPEG2 Transport Stream as the container type for the Video Encoder. To enable TS container streaming, you need to create either a new MPEG4 encoder or edit an existing MPEG4 encoder.

*Note: The **Type** on the Encoders page (**Encoders ➢ All Encoders**) displays as 264.*

Streaming to a TS container

Figure 55. MPEG4 encoder



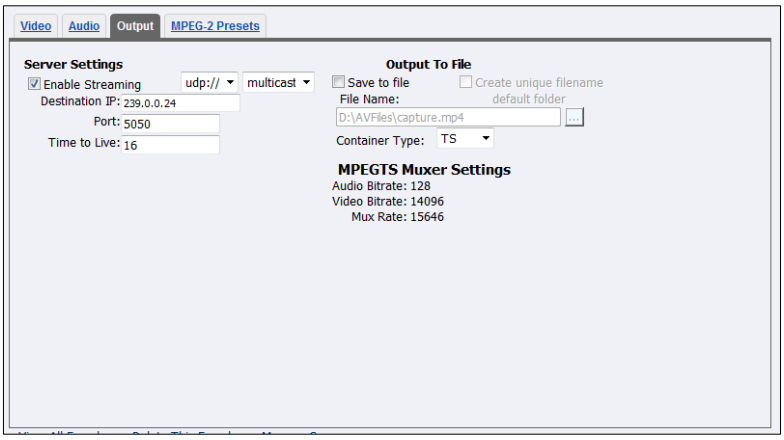
To configure TS container settings:

1. In the Video Encoder field on the Video tab, select either **MPEG2** or **H264**.

   Note: H.264 and MPEG2 are the only currently accepted video encoder types that will output with the TS container.

2. On the Output tab, Select **TS** as the Container Type.

Figure 56. MPEG4 Output tab

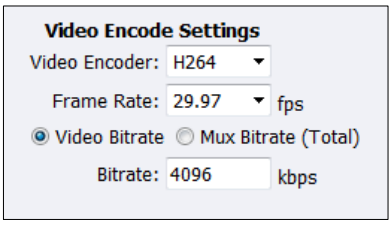


3. Click on the Video tab. Two additional fields display: **Video Bitrate** and **Mux Bitrate**.

4. Select either:

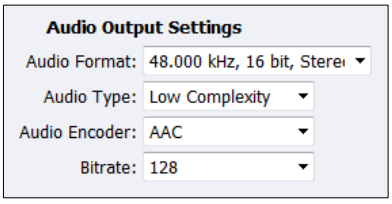
- Video Bitrate and enter how much bandwidth to use for the video in the Bitrate field.
- Mux Bitrate and enter the total bitrate the stream will consume (video and audio) in the Bitrate field on the Audio tab.

Figure 57. New Video Encode Settings



5. Click on the Audio tab.

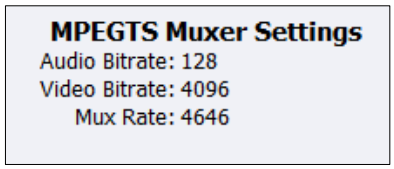
Figure 58. Audio Output Settings



6. Select the **Bitrate** from the drop-down list.

7. View all the bitrates on the Output tab in the MPEGTS Muxer Settings.

Figure 59. MPEGTS Muxer Settings



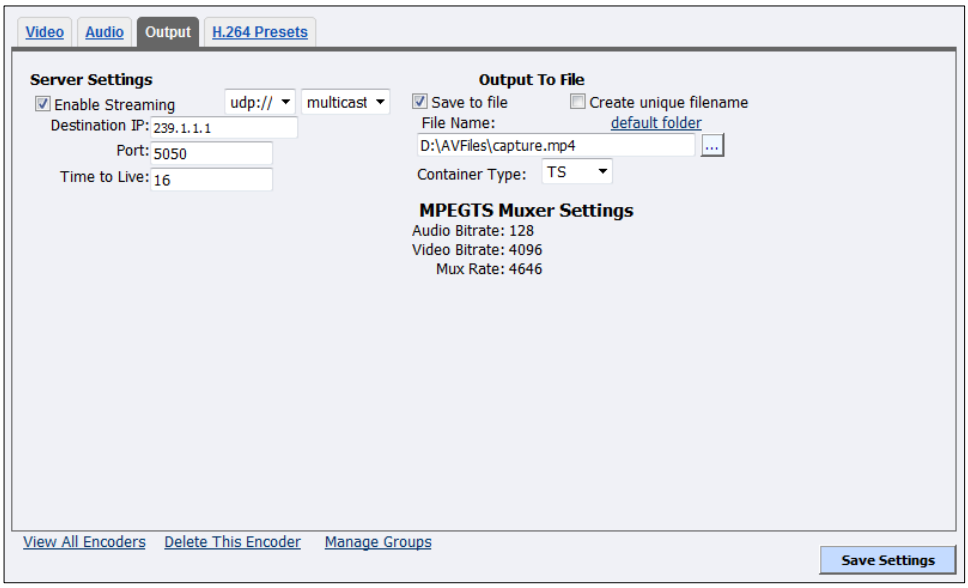
Note: The total isn't simply Audio Bitrate + Video Bitrate. A small amount of overhead is built in ~10% of the Mux.

Streaming

Streaming to a file with the TS container is the same for the other containers. Streaming is slightly different.

Output tab

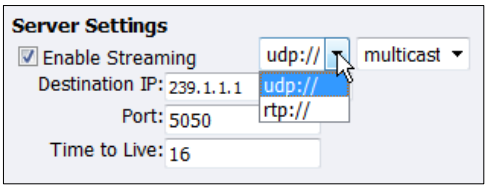
Figure 60. Output tab ➢ Enable Streaming



To configure streaming:

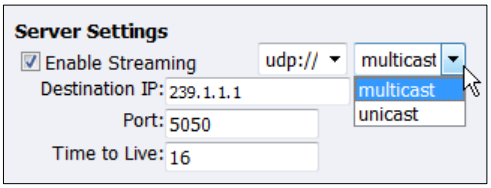
1. Select **Enable Streaming** on the Output tab.
2. Select the protocol. Currently only UDP and RTP are supported.

   Figure 61. Server Settings ➢ Scheme

3. Select either:
   - Unicast – To stream to a single computer or device.
   - Multicast – To stream to many computers and/or devices.

   Figure 62. Server Settings

4. Enter the **Destination IP** (must be an IPv4 address). If you select Unicast, then the IP address can *not* be in the 224.0.0.0 – 239.255.255 range. If you select Multicast, then the IP address *must* be in the 224.0.0.0 – 239.255.255.255 range.
5. Enter a valid **Port**.
6. Enter a **Time to Live**.
7. Click **Save Settings**.

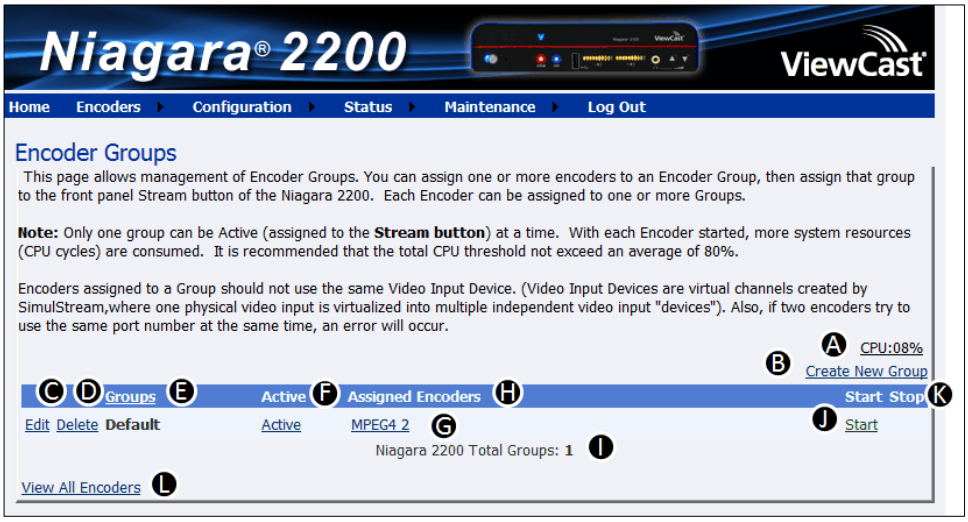
Encoder Groups

Encoder groups represent the cornerstone for streaming on the Niagara 2200. You must have at least one group assigned on the Niagara 2200 and one encoder profile assigned to that group.

Viewing encoder groups

The **Encoder Groups** window (Figure 63), a subset of **Encoders** (on the Encoders window), allows you to view the list of encoder groups available on the Niagara 2200. Click **Encoders** ➢ **Groups** from the menu bar on the home page.

Figure 63. Encoder Groups window



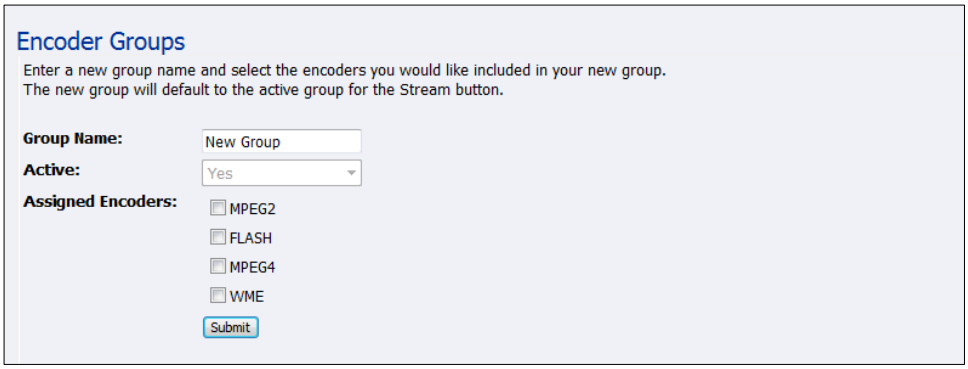
A	Displays the CPU usage. Click the link to open the System Configuration window to adjust the CPU threshold.
B	Click this link to create a new group.
C	Click this link to edit a group.
D	Click this link to delete a group.
E	Displays the name of the group. Click this link to sort the groups by name.
F	Click this link to display the Active Encoder Group window and assign an encoder or group of encoders to the Stream button.
G	Click this link to view and the encoder assigned to this group.
H	Indicates the encoders assigned to this group.
I	Displays the total number of groups for this encoder.
J	Click this link to start this group.
K	Click this link to stop this group.

Creating encoder groups

If two encoders try to use the same port number at the same time, an error will occur.

Select the **Create New Group** link on the **Encoder Groups** window. The encoder groups fields display (Figure 64).

Figure 64. Encoder Groups window



To create encoder groups:

1. Enter the name of the group.
2. Click on the preset button you want to assign to this encoder group.
3. Click on the encoders you want to assign to the group.
4. Click **Submit**.

Note: On the Niagara 2200, the new group created is automatically assigned as the active group.

Note: It is possible to assign one encoder to two different encoder groups.

Assigning encoder groups

You can assign an encoder or group of encoders to the front panel **Stream** button using the Active Encoder Group window (Figure 65). Click **Encoders** ➢ **Active Group**.

Figure 65. Active Encoder Group window

To assign encoder groups:

1. Click on the encoder group from the **Select a Group** drop-down list.

   *Note: Click on the **Create New Group** link to display the Encoder Groups window and add new groups.*

2. Click **Submit**.

*Note: You can only assign one group at a time to the **Stream** button with a maximum of 12 groups.*

Starting an encoder group

To start an encoder group, click the **Start** link to the right in the **Start** column of the group you want to start. The encoder group will start in a few seconds. The system displays any errors on the Starting window while the group starts.

> *Note: With each encoder started, more system resources (CPU cycles) are consumed. ViewCast recommends the total CPU threshold not exceed 80 %.*

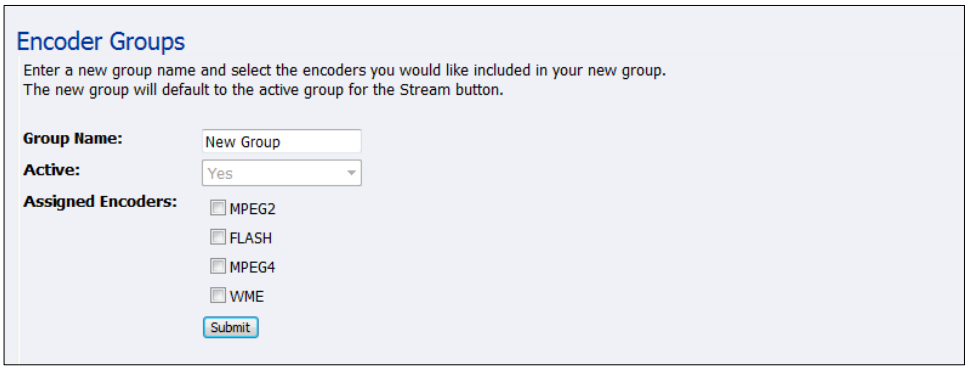
Stopping an encoder group

To stop an encoder group, click the **Stop** link to the right in the **Stop** column of the group you want to stop. The encoder group will stop in a few seconds. The system displays any errors on the Stopping window while the group stops.

Editing encoder groups

Click the **Edit** link on the **Encoder** window. The Encoder Groups window displays (Figure 66).

Figure 66. Encoder Groups window



To edit encoder groups:

1. Enter the name of the group.
2. Click **Yes** or **No**.
3. Click on the encoders you want to assign to the group.
4. Click **Submit**.

Additional Settings and Features

Configuring Niagara 2200 properties

The Niagara 2200 **Machine Properties** window (Figure 67) provides details on software versions, network name, serial number, and hard drive configurations. Click **Configuration ➢ Niagara 2200 Properties** from the menu bar on the home page.

Figure 67. Machine Properties window

Most of the data on this window provides information only and users cannot alter it. However, you can modify two fields:

- Computer name
- Admin password

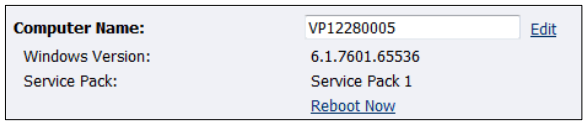
Changing computer name

The **Computer Name** field contains the current network name for the Niagara 2200. This name is the same name you typed into the web browser to access the Niagara SCX web interface.

To change the computer name:

1. Click the **Edit** link next to the Computer Name field (Figure 68).

Figure 68. Computer Name field



2. The screen refreshes and the Computer Name field becomes an editable text field. Type in a new name for the Niagara 2200.
3. Click **Submit** at the bottom of the page.

Note: The page refreshes, and the system prompts you to reboot the Niagara 2200. Your changes do not take effect until the system restarts.

4. Click the **Reboot Now** link to restart the system and apply the Computer Name change.

Note: The restart process takes approximately two minutes to complete.

*When the Niagara 2200 restarts, use the new system name in the IE browser URL to return to the **Login** window.*

If you close your web browser and later want to log into the web interface, you must use the new computer name you created or the IP address of the appliance to access the Niagara 2200.

Changing the login password from the factory default

The Niagara 2200 Properties section has two fields: **User Name** and **Serial Number**. You can only change the **User Name** field, which changes the **User Password** from the factory default (Figure 69).

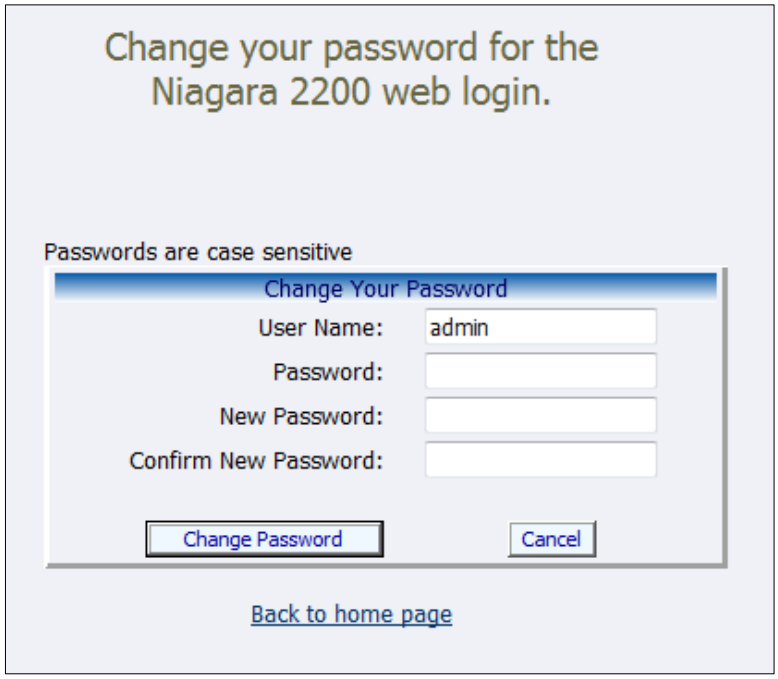
Figure 69. Properties section

To change login password:

1. Click the **admin** link in the **User Name** field.

   Note: The system displays a new window (Figure 70) that allows you to change your login password for the web interface.

   Figure 70. Password change window



   *Note: You cannot change the **User Name** for the web interface from this window.*

2. Type your current password in the **Password** field. Continue by typing your desired new password in both the **New Password** and **Confirm New Password** fields. The web interface password is case sensitive.
3. Click the **Change Password** button. The system displays a confirmation page. You must log back into the web interface with your password.

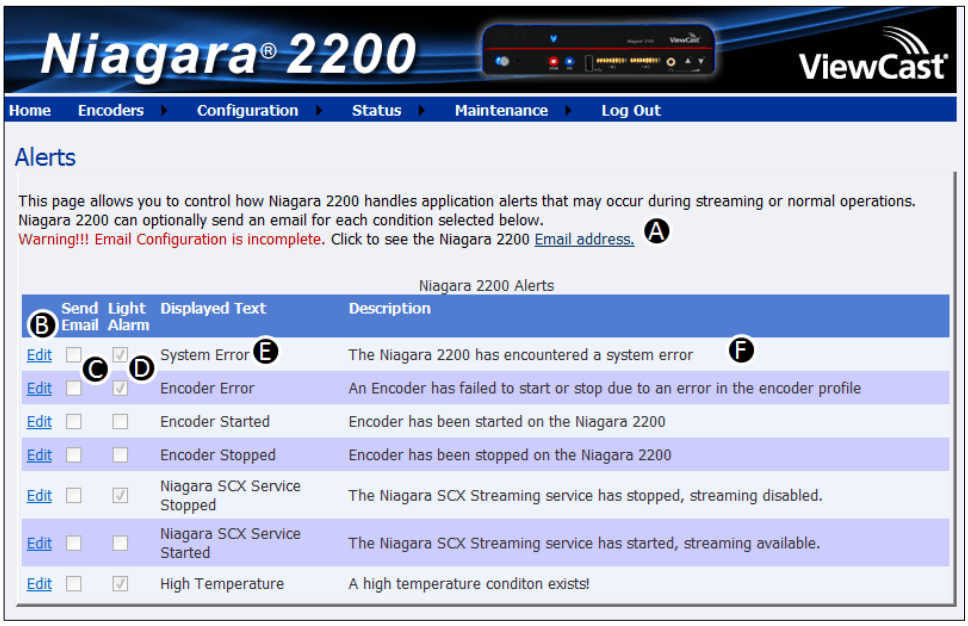
Restoring the login password to the factory default

If you forget or lose your password, you can restore the default password by running the **Restore Niagara 2200 Factory Defaults** option. For more information, see *Restore Niagara 2200 Factory Defaults* in the *System Configuration* section later in this chapter.

Configuring alerts

Click **Configuration** ➢ **Alerts** from the menu bar on the home page. The Alerts window (Figure 71) allows you to configure alerts for different situations that may occur during streaming or other operations.

Figure 71. Alerts window



To configure alerts:

A Click this link to configure email settings on the System Configuration Settings window.

B Click the **Edit** link next to the alert you want to change settings on.

C Enable the **Send Email** check box to send an email to multiple recipients should an alarm occur.

Note: You can optionally send an email alert to specific email address in the event of an application alarm. You must specify the email address where you want an alert sent, along with your email server user name, password, and server name. For more information about configuring the Niagara 2200 to send email alerts, see the System Configuration section.

D Enable the **Light Alarm** check box. The alarm light on the front panel of the Niagara 2200 will automatically light when an alarm condition exists.

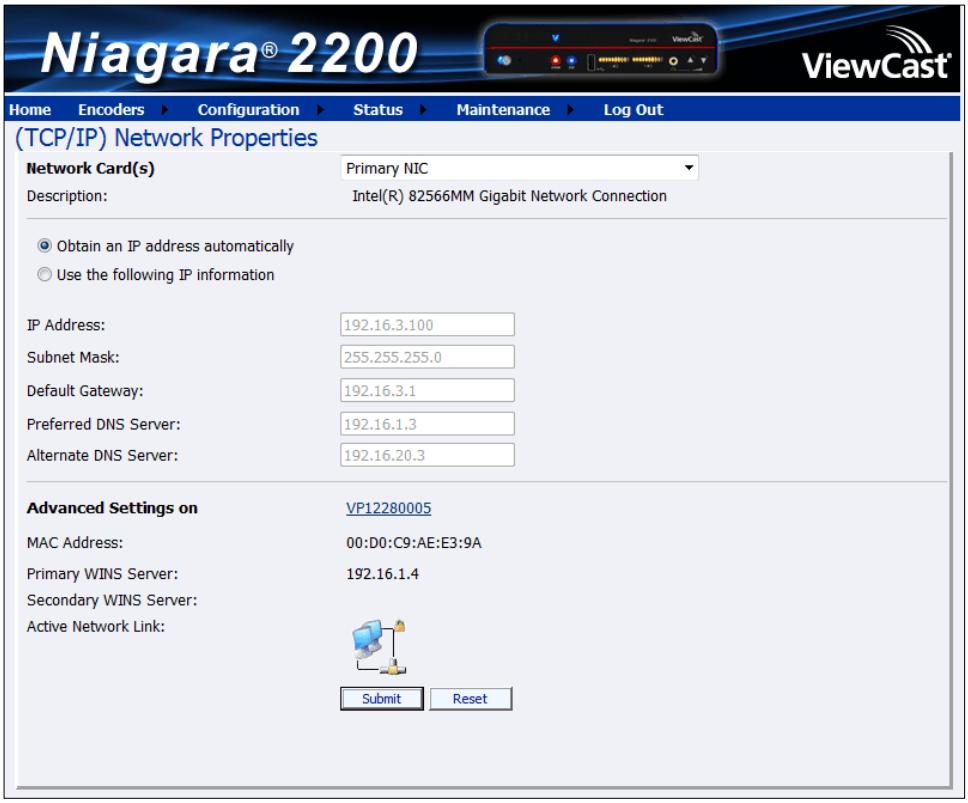
E Displays the type of alert.

F Provides a description of the type of alert.

Configuring network properties

The **Network Properties** window (Figure 72) provides detailed information on the current network settings for the Niagara 2200 **Network Cards**. Click **Configuration** ➢ **Network Properties** from the menu bar on the home page.

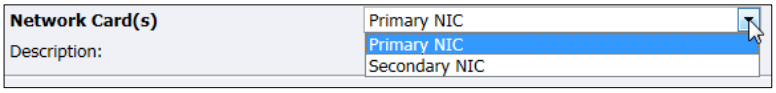
Figure 72. Network Properties



Configuring network card(s)

The Niagara 2200 has two Gigabit network connections available on the **Network Properties** window, **Network Card(s)** field). Select the card you wish to view from the drop-down menu in the **Network Card(s)** field (Figure 73) to view the current properties for each card.

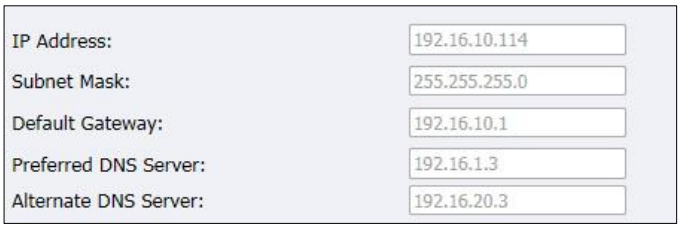
Figure 73. Network card options



Configuring IP address

Depending on your system configuration, you may need to configure the **IP Address** (Figure 74).

Figure 74. IP address



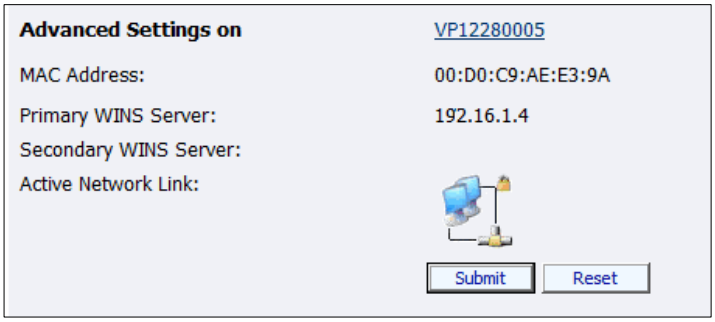
To configure IP address:

1. Click the Use the following IP information checkbox.
2. Enter the appropriate information in the IP Address, Subnet Mask, Default Gateway, Preferred DNS Server and Alternate DNS Server fields.
3. Click **Submit**.

Configuring advanced settings (network)

Advanced network settings provides the Niagara 2200 network name, MAC Address, and server IP address settings (Figure 75).

Figure 75. Advanced Settings



The Niagara 2200 network name (**VP12280005**) is a link. If you click this link, the system transfers you to the Machine Properties window. From this window, you can change the name of the Niagara 2200.

The **Active Network Link** field uses one of two icons to indicate whether the network interface card selected has a network connected.

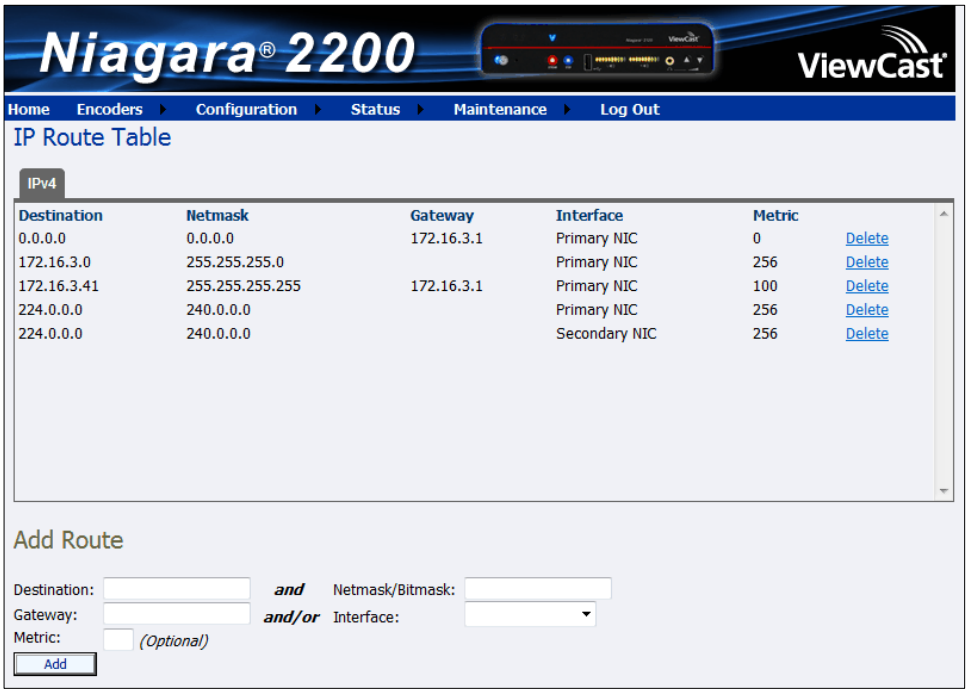
The system detects the network link.

The system does *not* detect the network link.

IP Route table

This window enables you to change the IP destination. Only experienced professionals should adjust these settings.

Figure 76. IP Route table



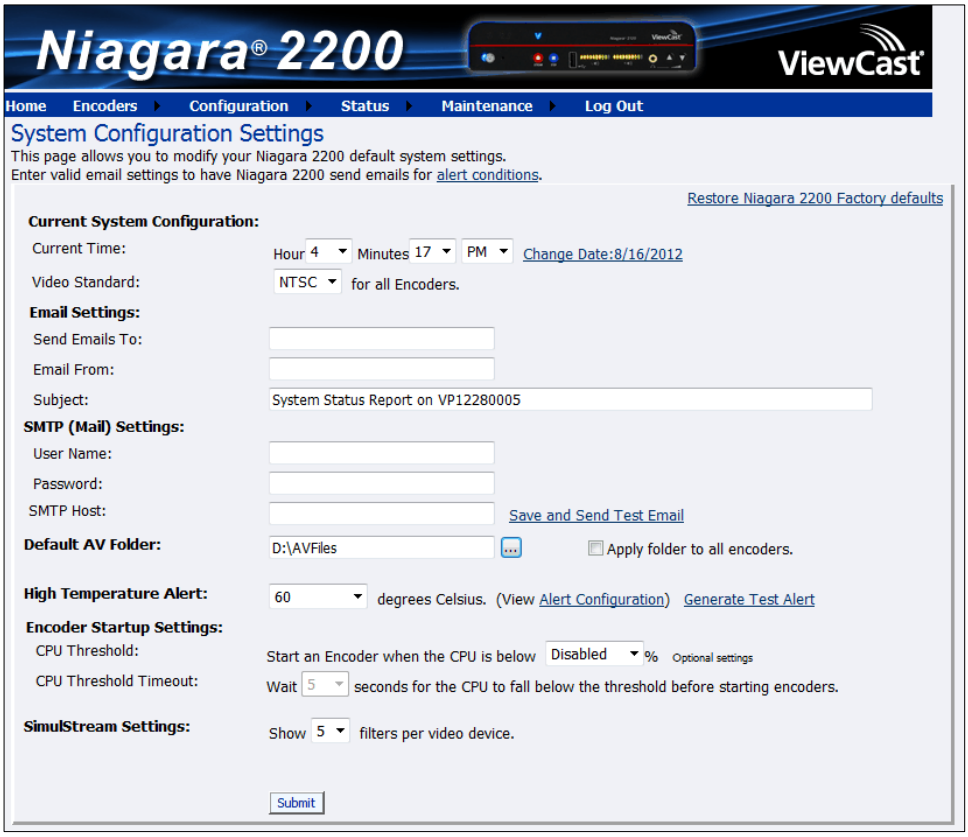
System configuration settings

The **System Configuration Settings** window (Figure 77) allows you to modify your Niagara 2200 default system settings. You can configure email settings to enable Niagara 2200 to send an email to predefined email addresses any time the Niagara 2200 encoder encounters an alert condition. You can also customize the information the Niagara 2200 displays on its front panel when the system exists in idle mode.

This window also allows you to restore your Niagara 2200 to its original factory disk image and return all the system settings to their original states. Using the **Restore Niagara 2200 Factory defaults** option removes all custom settings. It takes approximately 15 to 40 minutes to complete.

Click **Configuration** ➢ **System Configuration** from the menu bar on the home page.

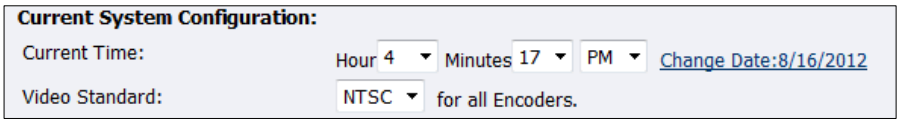
Figure 77. System Configuration



Setting current system configuration

You can set the current time, date, and the video standard for all encoders (Figure 78).

Figure 78. Current System Configuration

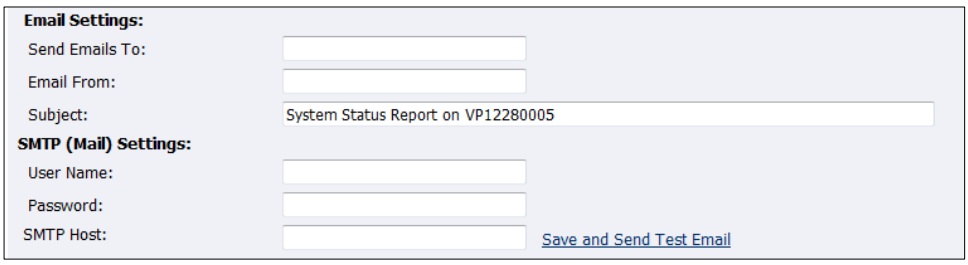


To set current system configuration:

1. Click the **Hour** in the drop-down list.
2. Click the **Minutes** in the drop-down list.
3. Click AM and PM in the drop-down list.
4. Click the **Change Date** link. A calendar appears.
5. Click the date on the calendar.
6. Click the **Video Standard** from the drop-down list.
7. Click **Submit**.

Configuring email settings

Figure 79. Email/SMTP Setting fields



To set current system configuration:

1. Enter the email address you want the system to send the email. Separate multiple email addresses with a comma.
2. Enter a valid originating email address.
3. Enter a subject line for your email alert.
4. Enter the SMTP user name for server access.

   Note: If you are unfamiliar with setting up an SMTP Email account for sending email, contact your network administrator for assistance.

5. Enter the password if required.

   *Note: For security purposes, the **password** for your account does not display once the system enters it into the **Niagara 2200** settings. Although this field appears blank after you click **Submit**, the system retains the password information.*

   *If you change any information in this dialog box, you need to re-enter your **SMTP password** before clicking **Submit**. Not doing so overwrites the previously entered password with a blank entry.*

6. Enter the name of the **SMTP server**.
7. Click the **Save** and **Send Test Email** to test your settings. The resulting window reports the email as successful or it sends information that a send failure occurred.
8. Click **Submit**.

Configuring default directory setting

The Niagara 2200 stores AV files when you click the Save to File option in the encoder profile in the Default AV folder. Refer to the **Save to File** option under the Flash Encoder Properties (Figure 80) sections for information on setting an encoder profile to create an AV file.

Note: ViewCast strongly recommends you do not alter the default directory setting unless you understand the risk of saving your files to a directory not located on the D: drive. If you save your files to another drive on the Niagara 2200, the system could delete the files when you use the Restore to Niagara 2200 Factory Defaults feature.

Only drive D on the Niagara 2200 has available storage to save your files. This drive has approximately 100 Gigabytes of storage capacity.

Use drives C, E, and F strictly for the Niagara 2200 operational programs. Any modifications to these drives can permanently damage your system and void your warranty.

Figure 80. Default AV Folder field

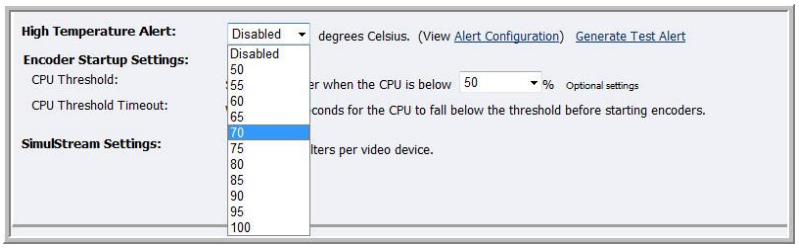
Setting the high temperature alert

The **Alert Configuration** links to the **Niagara 2200 Alerts** window (Figure 81). Refer to pertinent previous sections in this user guide for information on setting the **Niagara 2200 Alerts**.

Figure 81. High Temperature Alert

You can enable an alert if the Niagara 2200 reaches a predefined maximum temperature level. To set the temperature level, click an option from the drop-down menu (Figure 82).

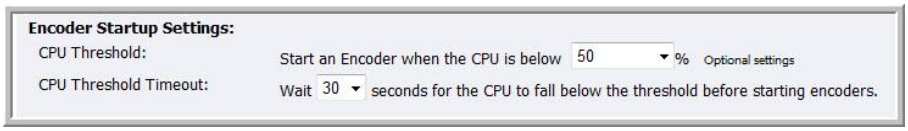
Figure 82. Drop-Down Temperature Setting Options



Setting CPU thresholds

You may set the **CPU Threshold** field (Figure 83) to accommodate optimal encoding capabilities. You also may set the time between repetitive intervals for checking the CPU threshold.

Figure 83. Encoder Startup Settings

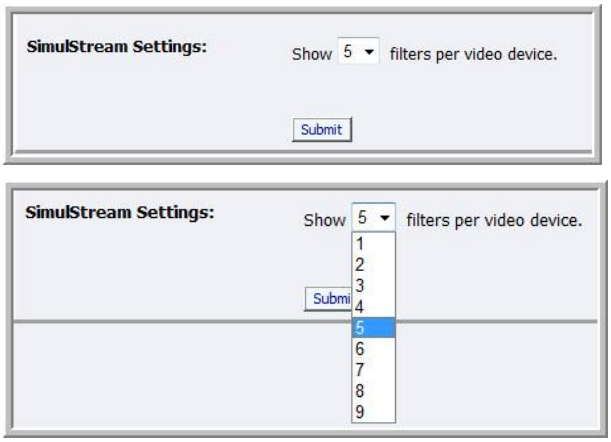


Note: ViewCast recommends a CPU threshold setting of 80% or lower.

Setting SimulStream filters

You may indicate the number of SimulStream filters per video device using the SimulStream Settings field (Figure 84).

Figure 84. SimulStream settings



Restoring Niagara 2200 factory defaults

Restore to Factory Defaults allows you to restore drive C to its original factory system defaults. This action removes all data (including stored files) on the primary drive and reinstalls the original factory image.

> *CAUTION! Select this option only if you wish to return your system to its factory defaults. Selecting this option erases all data currently stored on drive C and stops all currently running programs. Remove any USB memory device before performing a Factory Restore.*

This operation takes approximately 15 to 45 minutes to complete. Do *not* power off or interrupt the system restore once it starts. All services automatically restart when the system restore completes. You may then use the Niagara 2200 web interface tool to reset the time, date, and video format.

Click the **Restore Niagara 2200 Factory defaults** link on the **Configuration ➢ System Configuration Settings** window to start the process (Figure 85).

Figure 85. Restore Factory defaults

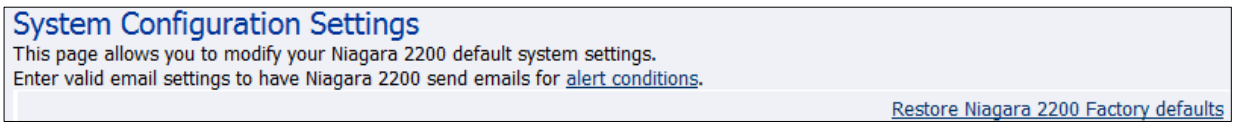
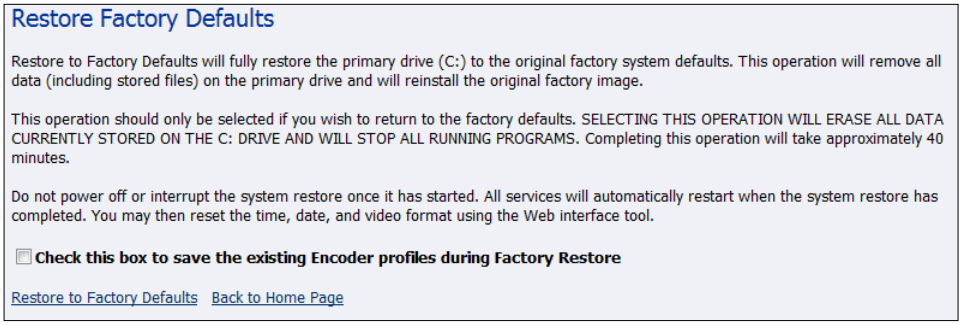


Figure 86 provides you details regarding the process you are about to execute and allows you the opportunity to cancel the process by clicking **Back to Home Page**.

Figure 86. Restore Factory Defaults



Note: Restore to Factory Defaults rebuilds the Niagara 2200 primary disk drive C with the original system image. You lose all custom settings and any files saved to drive C. You cannot reverse this process. However, you can manually re-enter your custom settings once the Niagara 2200 restore process completes.

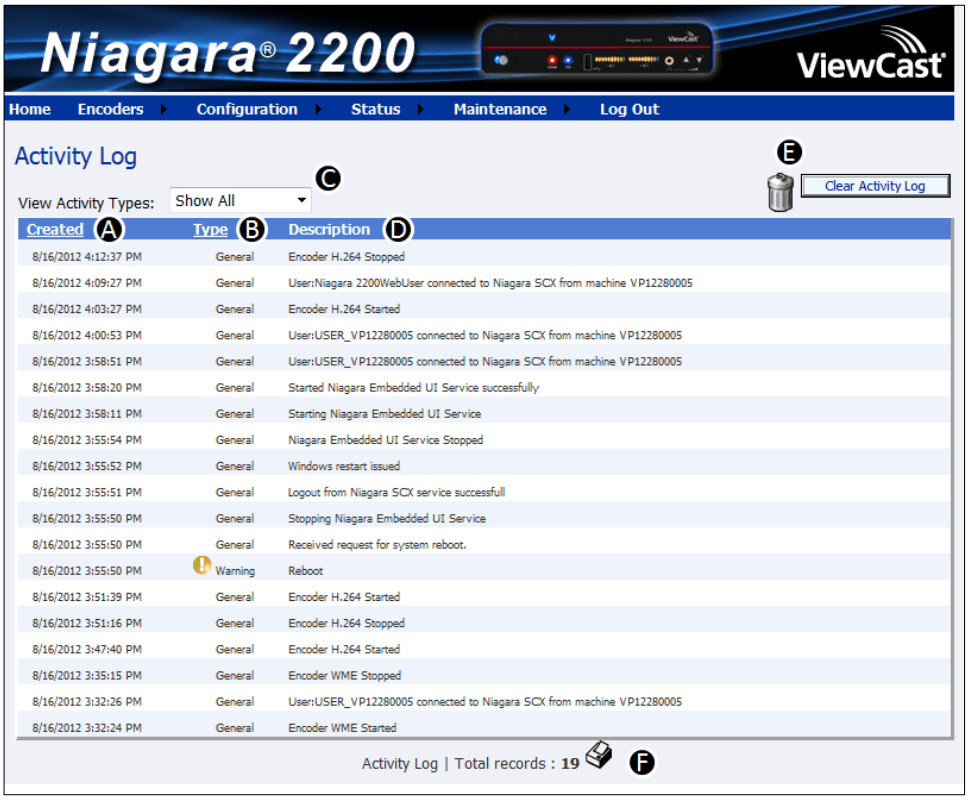
Use the default directory, D:\AV Files\, for saving your audio and video files. The system only re-images drive C when you use the Restore to Factory Defaults option. It preserves all files and folders on drive D. Always use the default directory – drive D – for storage of personal files to ensure the system does not remove your personal files.

WARNING! Remember that the system deletes all previously stored encoder profiles and groups when you restore it to its factory defaults. Unless you select the ***Save encoder profiles*** *check box.*

Viewing the activity log

The Activity Log records the encoder Start and Stop events. The system updates the log for every event including the date and time. To view the activity log, on the home page click **Status** ➢ **View Activity Log**.

Figure 87. Activity Log window



A Displays the system date and time stamps for each event. Click this link to sort the activities by date.

B Indicates the type of activity. Click this link to sort the activities by type.

C Select the types of activity you wish to view. Options include:

- Show All
- General
- Errors
- Warnings

D Displays a description of the activity.

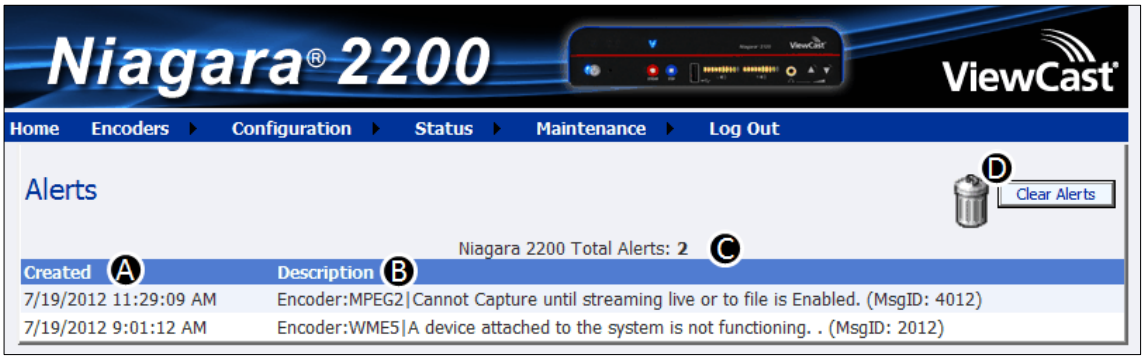
E Click this link to clear all logged activities.

F Displays the total number of records for the selected view type. Click the printer icon for a printer friendly view of activity log. When the print friendly view appears, click **File** ➢ **Print** to print a hard copy or save a soft copy of the Activity Log.

Viewing alerts

Click **Status** ➢ **View Alerts** from the home page. The Alerts Window updates with every alert event on the Niagara 2200. The alerts include any specific alert events for the encoder.

Figure 88. Alerts window



A Displays the date and time that the alert occurred.

B Displays the message ID number for the alert and the description.

C Indicates the total number of alerts.

D Click this icon to clear all alerts.

Connecting an external storage device

The Niagara 2200 provides two USB ports, one on the front panel and one on the rear panel. You can connect almost any standard USB memory device to one or both of these ports. This allows you to export any AV files you created on the local storage drive of the Niagara 2200. The encoder defaults to set the local storage drive D when you use the **Save to File** setting with the Niagara 2200 web interface.

When you insert a USB memory device in one of the USB ports on the Niagara 2200, the Niagara 2200 automatically detects the removable storage device, and assigns a drive letter to the device. Use standard Windows methods to transfer AV files from drive D to the attached USB device.

Using the Niagara SCX interface

You may wish to perform even more advanced setup and operations. To do so, you may choose to access the **Niagara SCX** interface. You may access the Niagara SCX interface through a remote desktop by connecting a monitor, keyboard, and mouse to the Niagara 2200 or by installing the Niagara SCX Explorer on a remote computer. Use the *Niagara SCX User Guide* for specific information on how to use the Niagara SCX and the Niagara SCX Explorer software.

SNMP

This section provides installation and setup information for the ViewCast SNMP agent service. This release supports SNMP v1 and SNMP v2c. SNMP v3 will be supported in future releases.

It is assumed that the SNMP agent service will be installed and run in the Niagara® system on Windows 7 platform.

In order for SNMP agent in the system to function fully, you need to install and run the following services:

- Native Windows SNMP service
- Supero Doctor III agent service (also called SuperMicro Health Assistant Service)
- SNMP agent service

The native Windows SNMP service implements standard MIB functions such as those defined in RFC1213-MIB, HOST-RESOURCES-MIB including IP address table, interface table (MAC addresses) and traps of cold start, interface link up, link down, etc.

The Supero Doctor III SNMPagent service is a third-party SNMP agent provided by Super Micro Computer to monitor the health of system devices, such as fan speed, CPU temperature, system temperature, etc.

The ViewCast SNMP Agent service will run as the master SNMP agent in the system. It will not only implement ViewCast private MIBs as listed below, but also provide proxy functions to relay SNMP requests/responses associated with those objects managed by other SNMP sub-agents.

- The private MIBs include VIEWCAST-AVENCODER-MIB and VIEWCAST-AVENCODER-TRAP-MIB, etc.

IMPORTANT! In the current release, while running ViewCast SNMP agent service, it is recommended that you ***Disable*** *the IIS (Internet Information Services) logging for ViewCast Encoders Web Service. This action avoids space being filled by IIS log files (see* Disable IIS Logging for ViewCast Encoders Web Service*).*

You need to enable monitoring for the associated devices on which SNMP traps are expected in case the device parameter is out of the pre-defined range. In the current release, health monitoring related SNMP traps are only available for devices such as fan speed, CPU temperature, and system temperature (see Install and Configure Supero Doctor III Agent Service.*)*

External SNMP Manager

With ViewCast SNMP agent enabled in each Niagara system, you can start a single SNMP manager at a central location to manage one or multiple systems at the same time.

The external SNMP manager could be a GUI-based commercial or free application tool or an SNMP scripting tool. The SNMP manager is your choice.

SNMP UDP Ports Used by SNMP Manager and SNMP Agents

UDP Port for SNMP Requests

When the external SNMP manager expects to "talk" to the ViewCast SNMP agent, it sends SNMP requests to the ViewCast SNMP agent over the default SNMP UDP port 161 with the following parameters:

- Correct IP address of the encoder system
- Other parameters such as an appropriate community name
- Configure the corresponding community name

Note: For SNMP v1/v2c version, a community name is treated as a password to access the resources managed by the SNMP agent. Different community names can have different access rights such as NOTIFY ONLY, READ ONLY, WRITE ONLY, READ WRITE and READ CREATE etc.

You can configure the ViewCast SNMP agent to receive SNMP requests over a different UDP port other than 161 (see *Use UDP Port Other Than 161 for SNMP Requests*).

Note: Once you configure the SNMP UDP port, you don't have to manually enable in the firewall setting. Instead, it is enabled automatically when the ViewCast SNMP agent is started.

Because the ViewCast SNMP agent acts as the master agent and "talks" to the external SNMP manager, it is not necessary to enable the firewall setting on the same UDP port for the native SNMP service.

UDP Port for SNMP Traps

SNMP traps are sent from the SNMP agent to the SNMP trap listener. You can monitor and receive SNMP traps over UDP port 162 from one or multiple SNMP-enabled Niagara systems. Perform the following to monitor and receive SNMP traps:

- Configure the IP address where the SNMP trap listener runs as one of the trap destinations for each affected ViewCast SNMP agent.
- Configure the corresponding community name.
- Keep running an SNMP trap listener application to monitor traps over SNMP UDP port 162 with an appropriate community name.
- Allow the trap listener to pass through the firewall on UDP port 162.

Note: Choosing a trap listener is up to you. The trap listener doesn't have to run on the system. Instead, it runs in a centralized location.

If you use the Windows SNMP Trap Service as the trap listener, you need to make sure Windows SNMP Trap Service is installed, started, and allowed to pass through the firewall on UDP port 162.

Install ViewCast SNMP Agent Service

Installing for the first time

Perform the following steps to install ViewCast SNMP Agent Service for the first time.

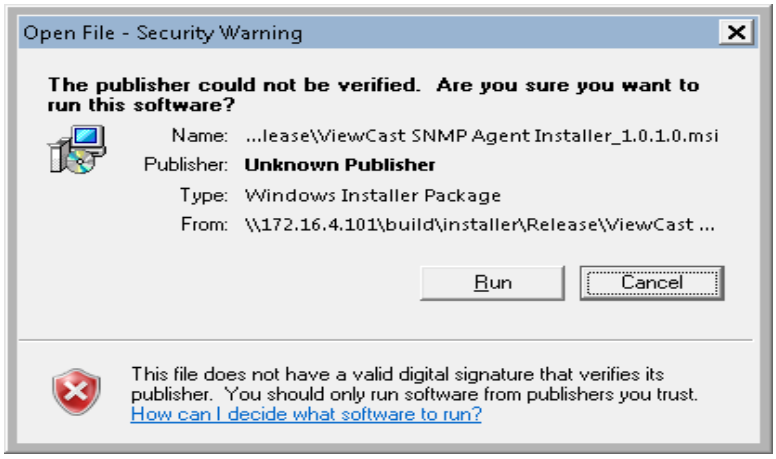
To install SNMP Agent the first time:

1. Locate and run the ViewCast SNMP agent installation file, e.g. ViewCast SNMP Agent Installer_1.0.4.0.msi to install the ViewCast SNMP agent service.

   Note: If a previous version of ViewCast SNMP agent has ever been installed, see Installing new version of ViewCast SNMP Agent Service.

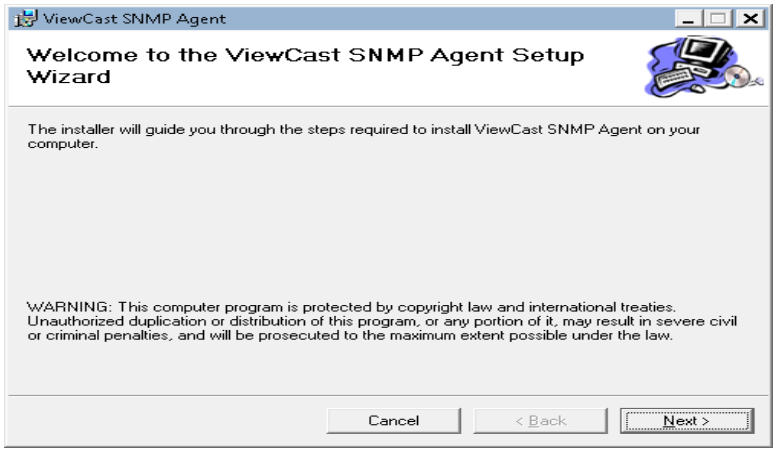
   A security warning window may display.

   Figure 89. Security warning window



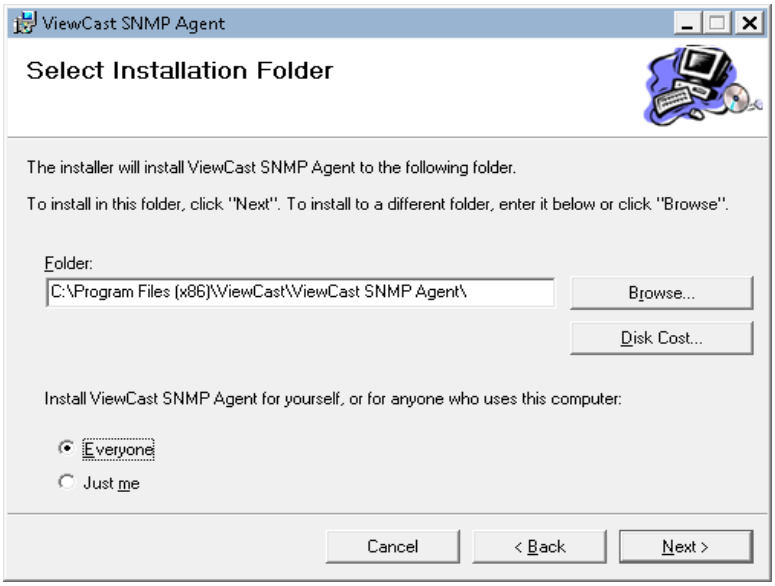
2. Click **Run**. The ViewCast SNMP Agent Server Setup Wizard walks you through the setup.

   Figure 90. ViewCast SNMP Agent Setup Wizard



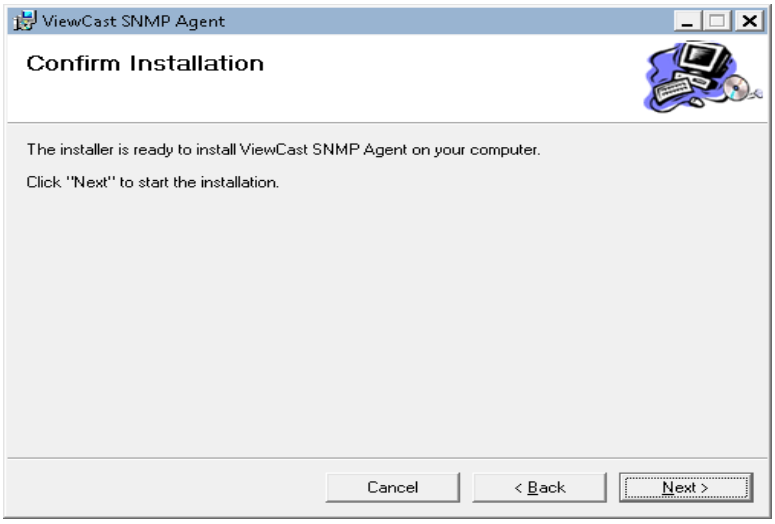
3. Click **Next**.

Figure 91. Installation Folder



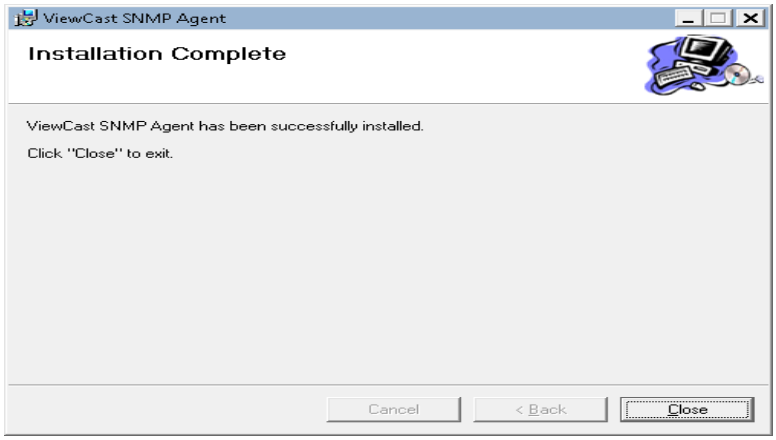
4. Click **Next**.

Figure 92. Confirm Installation



5. Click **Next**.

Figure 93. Installation Complete



6. Click **Close**.

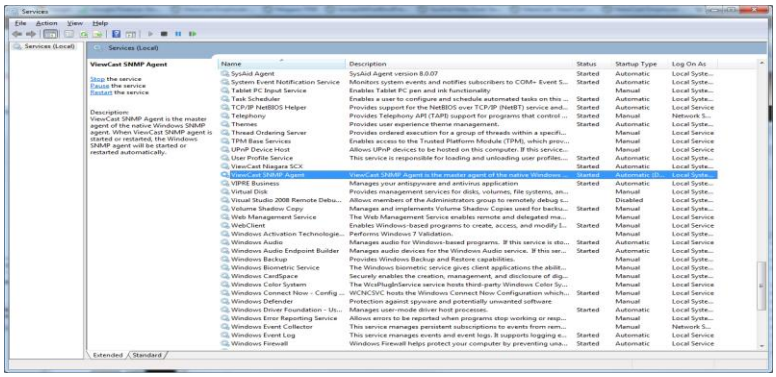
After the installation is complete, the ViewCast SNMP agent will be installed as an Automatic (delayed start) service. After the next reboot, it starts automatically. Typically, you don't need to reboot the machine after installation.

Before you start the ViewCast SNMP agent service, you need to install and configure the other two services: Native Windows SNMP service and SuperMicro Health Assistant service (see *Install and Configure Supero Doctor III Agent Service*).

To start ViewCast SNMP agent service manually:

1. Run Windows service management tool services.msc
2. Right click on **ViewCast SNMP Agent** then click **Start**.

Figure 94. ViewCast SNMP Agent

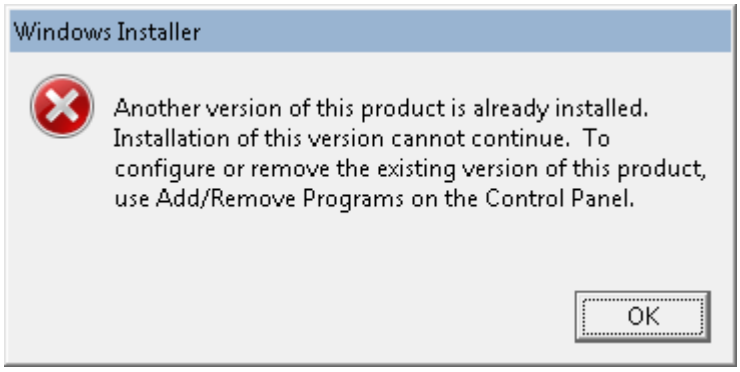


Note: When you start ViewCast SNMP agent service, the Windows SNMP service will start or restart automatically if Windows SNMP service is installed.

Installing new version of ViewCast SNMP Agent Service

If a previous version of ViewCast SNMP agent is installed, then the following window appears and you need to uninstall the previous version before continuing.

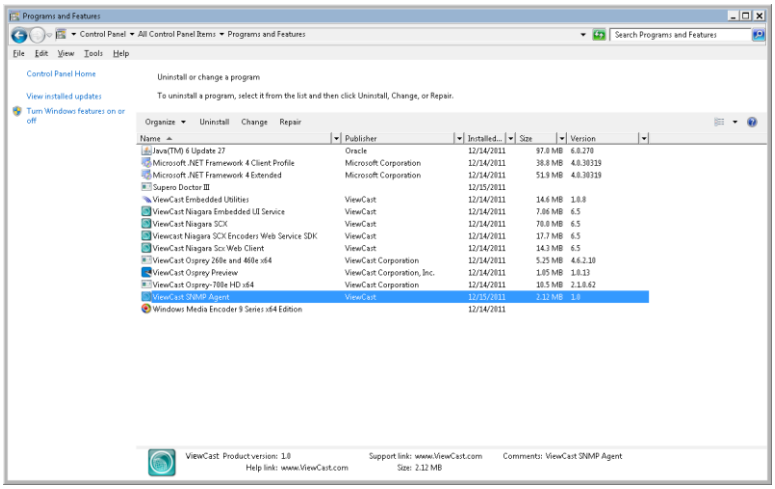
Figure 95. Windows Installer



To uninstall a previous version of ViewCast SNMP agent:

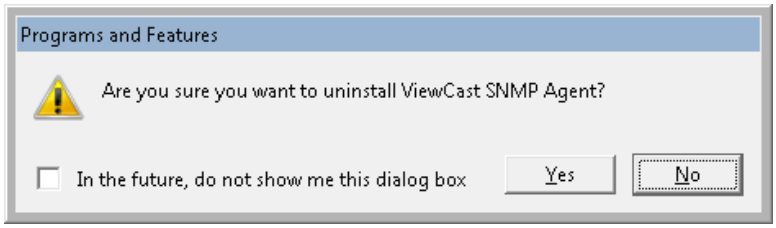
1. Go to Start Menu ➢ Control Panel ➢ Programs and Features.

Figure 96. Programs and Features window



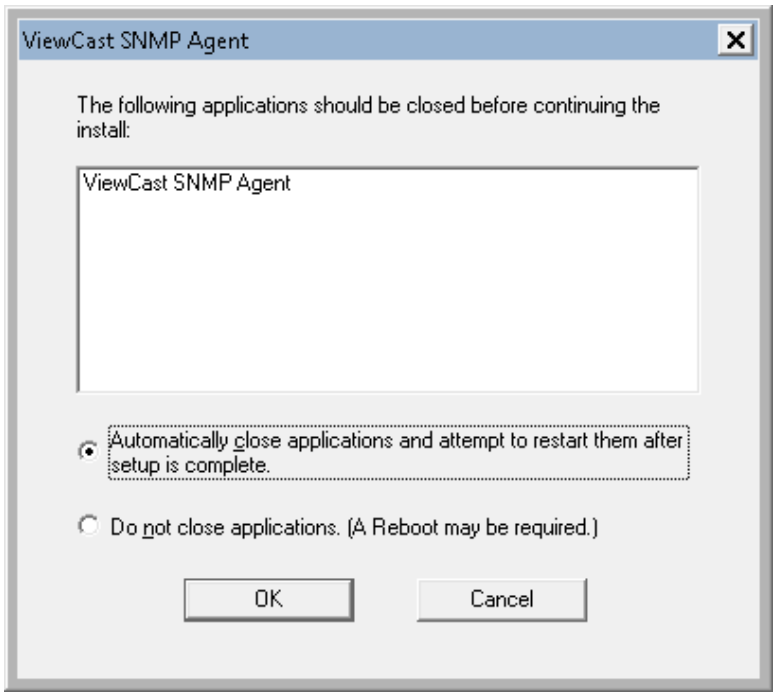
2. Select and uninstall (or double click) **ViewCast SNMP Agent** as shown in the program list.

Figure 97. Programs and Features dialog box



3. Click **Yes**. If ViewCast SNMP agent service is currently running, the following window displays.

Figure 98. ViewCast SNMP Agent dialog box



4. Select to automatically close the application and click **OK**. The ViewCast SNMP agent will be stopped automatically and uninstalled.
5. Locate and run the ViewCast SNMP agent installation file, for example, ViewCast SNMP Agent Installer.msi, to install the ViewCast SNMP Agent Service.

Install and Configure Supero Doctor III Agent Service

In order to monitor some devices in the Niagara system such as fan speeds, CPU temperature, system temperatures, etc., you need to install the third-party Supero Doctor III client and Supero Doctor III SNMPagent service (also called SuperMicro Health Assistant service) in the system.

Note: You need to enable the monitoring for the associated devices on which SNMP traps are expected in case the device parameters are out of the pre-defined range. For a monitoring enabled device, if the current reading is out of the range of the pre-defined low limit and high limit, ViewCast SNMP Agent Service will send a trap to all the configured trap destinations.

In the current release, health monitoring related SNMP traps are only available for devices such as fan speed, CPU temperature, and system temperature.

To install the Supero Doctor III client and Supero Doctor III SNMPAgent Service:

1. Download the Supero Doctor III client installation package from:
   ftp://ftp.supermicro.com/utility/SuperDoctor_III/64-Bit_Edition_x64/
   For Windows 7 platform, you can find a current version of Supero Doctor III client installation package named SD3_Vista_x64_1.34.369_110901.zip under the default ViewCast SNMP agent installation directory
   C:\Program Files (x86)\ViewCast\ViewCast SNMP Agent\
   This version is the latest at the writing of this document.
   You can also go to the following link to download the Supero Doctor III client:
   ftp://ftp.supermicro.com/utility/SuperDoctor_III/64-Bit_Edition_x64/Vista_2K8_Win7/Release/
2. Run the installation package. Choose and install **Supero Doctor III Client**. During installation, when asked whether or not to install SNMP agent, choose **Yes**.
3. After the installation is finished, a system reboot may be required. After reboot, the Supero Doctor III SNMPagent service called SuperMicro Health Assistant shall be running automatically.

Configure Supero Doctor III SNMP Agent Service

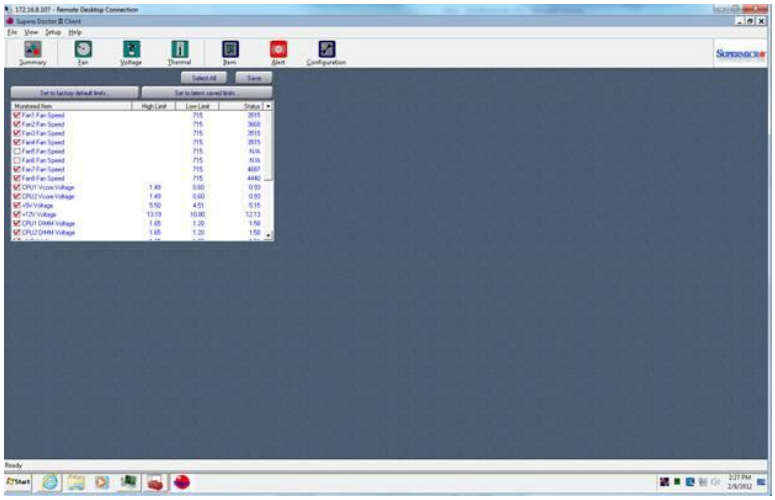
Disable health monitoring for devices not in use

While the Supero Doctor III SNMPAgent Service is running, you need to disable health monitoring for the devices, such as fans, that are not installed.

To determine and disable devices not in use:

1. Run Supero Doctor III client by clicking **Start ➢ All Programs ➢ SUPERMICRO ➢ Supero Doctor III client**.
2. In Supero Doctor III client, click on the **Item** icon. Figure 99 is for the Niagara 7550.

Figure 99. Supero Doctor III Client



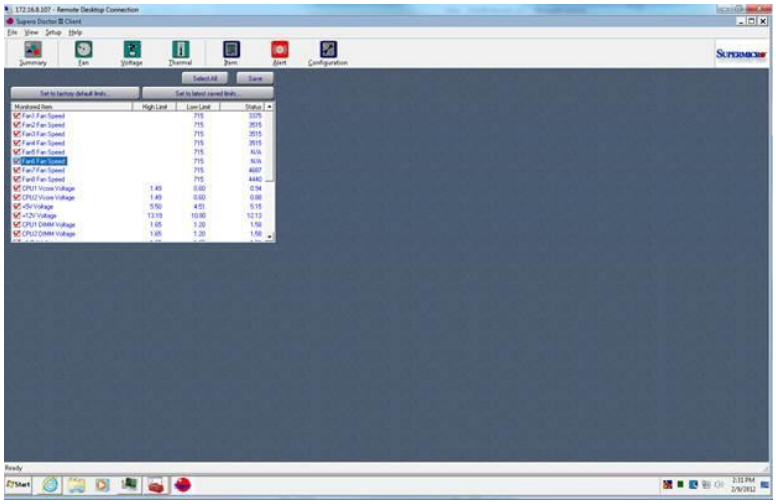
3. Devices that are not in use, display a status of N/A. In this case, disable health monitoring for these devices by double-clicking to clear the boxes on the associated devices.
4. Click **Save**.

Enabling health monitoring for devices not in use

To enable health monitoring for devices not in use:

1. Run Supero Doctor III client by clicking **Start** ➢ **All Programs** ➢ **SUPERMICRO** ➢ **Supero Doctor III client**.
2. In the Supero Doctor III client, click **Item**. The following figure displays an example on a Niagara 7550.

Figure 100. Niagara 7550 example



Configure ViewCast SNMP Agent Service

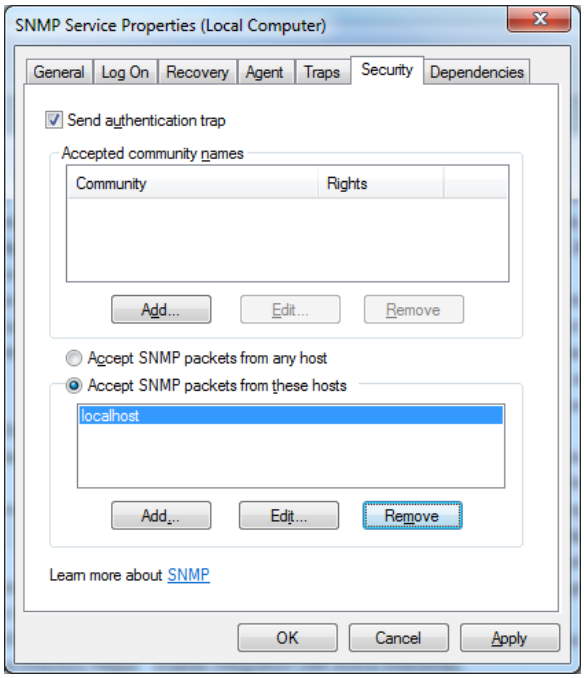
Complete the steps in the following tables to configure ViewCast SNMP Agent service. When the configuration is complete, restart the system.

Configuring community names

To configure community names:

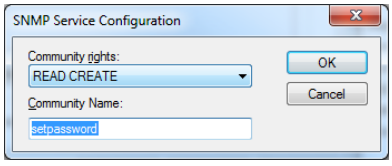
1. Run Windows service management tool services.msc
2. Right click on **SNMP Service** then click **Properties**.
3. Click on the Security tab.

Figure 101. Security tab



4. Click **Add** to add community names. For SNMP v1/v2c versions, treat each community name as a password for access control of the SNMP-enabled systems.

Figure 102. Community Name field



- You can define multiple community names with different community rights such as NOTIFY, READ ONLY, READ WRITE and READ CREATE.
- You can use these community names to access objects as defined in the standard MIBs (such as RFC1213-MIB) and ViewCast private MIBs (such as VIEWCAST-AVENCODER-MIB and VIEWCAST-AVENCODER-TRAP-MIB).
- READ CREATE has the maximum access right while the NOTIFY has the minimum

right.

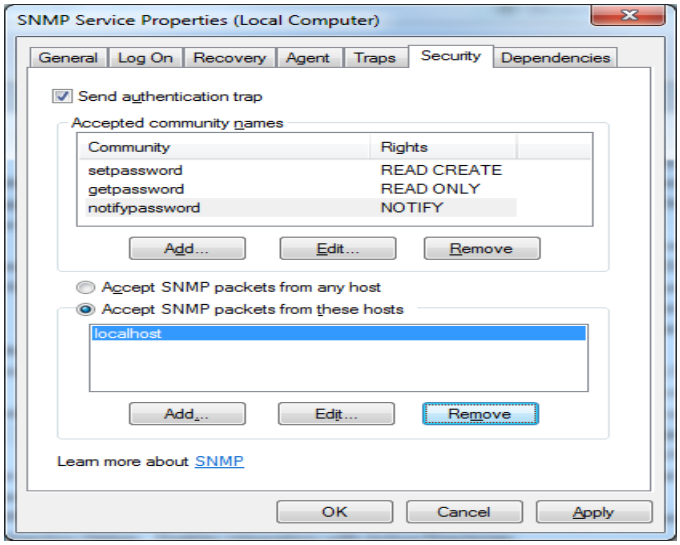
- Community names with NOTIFY permission can be used to monitor traps only, READ ONLY community names can be used to retrieve data only while READ CREATE ones can perform SNMP SET as well as GET requests, etc.

Configuring permitted SNMP managers

To configure permitted SNMP managers:

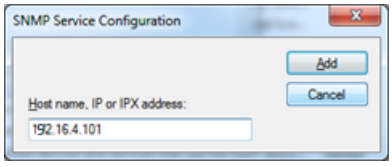
1. Run Windows service management tool services.msc ➢ right click on SNMP Service.
2. Click on **Properties**.
3. Click the **Security** tab.

Figure 103. SNMP Service Properties – Security tab



4. Select **Accept SNMP packets from these hosts**.
5. Click **Add**.
6. Enter the IP address of the permitted SNMP managers in the following window.

Figure 104. SNMP Service Configuration

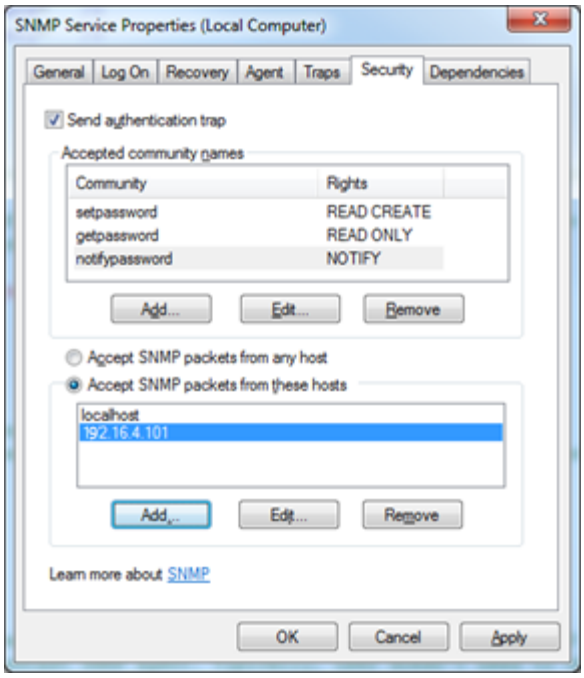


7. Click **Add**.

Note: The IP address shown above is just an example. It shall be the IP address of the external SNMP manager.

8. Add all the IP addresses at which external SNMP manager may run.

Figure 105. IP Addresses

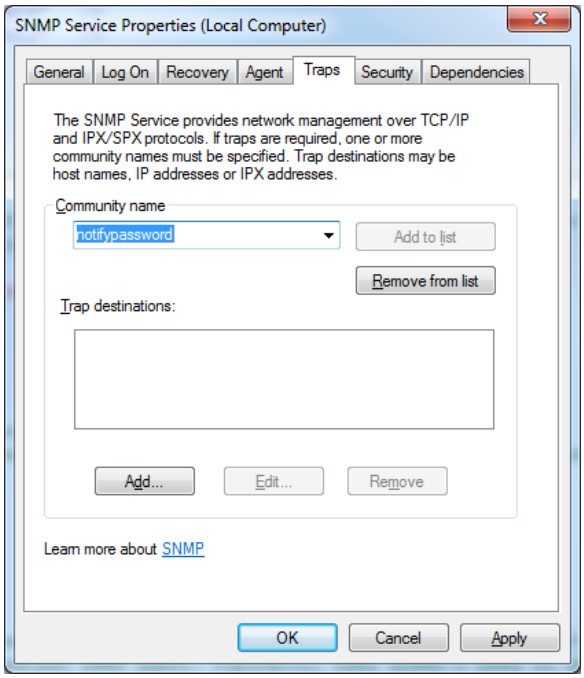


Configuring trap destinations

To configure trap destinations:

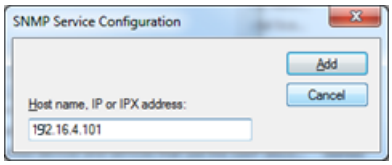
1. Run Windows service management tool services.msc
2. Right click on **SNMP Service** then click on **Properties**.
3. Click on the **Traps** tab.
4. In the Community Name section, enter one of the community names that are defined through the Security tab, for example, **notifypassword**.
5. Click **Add to list**.

Figure 106. Traps tab



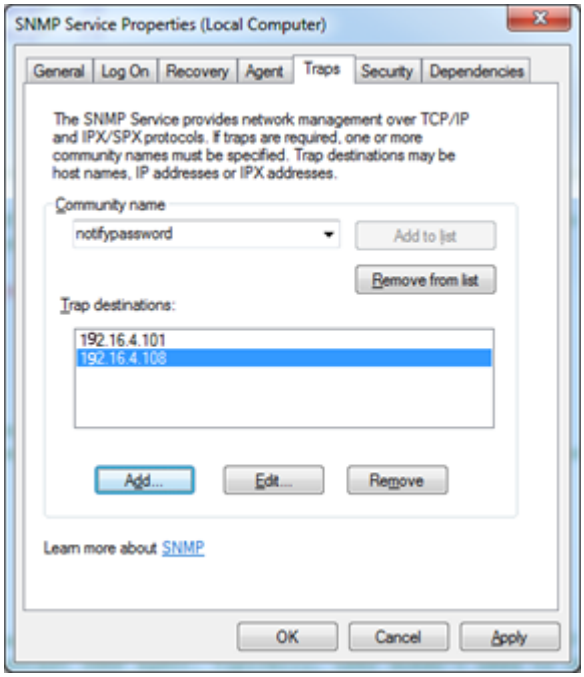
6. In the Trap destinations section, enter the IP address of each trap destination at which the trap listener may run.

Figure 107. SNMP Service Configuration



7. After all the IP addresses under the trap destination section are added, click **Apply**.

Figure 108. Trap destinations



Configuring SNMP Agent contact and location (optional)

After community names, permitted SNMP managers and trap destinations are configured, you may configure the contact and location information for the associated SNMP agent.

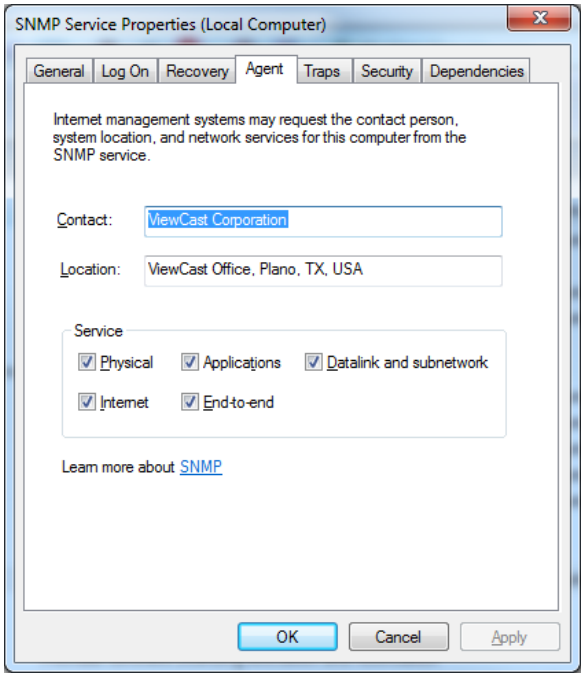
To configure SNMP Agent contact and location:

1. Run Windows service management tool services.msc
2. Right click on **SNMP Service** then click on **Properties**.
3. Click on the Agent tab.
4. Enter appropriate **Contact** and **Location** information.

   Notes: You may retrieve the system contact information through SNMP query on .iso.org.dod.internet.mgmt.mib-2.system.sysContact as defined in RFC1213-MIB.

   You may retrieve the system location information through SNMP query on .iso.org.dod.internet.mgmt.mib-2.system.sysLocation as defined in RFC1213-MIB.

   Figure 109. Agent tab



5. Restart the system.

Use UDP Port Other Than 161 for SNMP Requests

The default UDP port used for SNMP requests sent from SNMP manager to SNMP agent is 161. The ViewCast SNMP agent supports the use of a different UDP port. To make this change, perform the following steps:

1. After ViewCast SNMP Service Agent is installed, go to the default installation directory C:\Program Files (x86)\ViewCast\ViewCast SNMP Agent\
2. Make a copy of file vcst_snmp_agent_cfg_example.xml and save it to vcst_snmp_agent_cfg.xml.
3. In vcst_snmp_agent_cfg.xml , keep the default setting unchanged as shown below.

```
<snmp_setting_flags>

    <permitted_managers_option  use_win_snmp_settings =
"true"  />

    <valid_communities_option   use_win_snmp_settings =
"true"  />

    <trap_configuration_option  use_win_snmp_settings =
"true"  />

</snmp_setting_flags>
```

4. In vcst_snmp_agent_cfg.xml, for element `udp_port_to_snmp_manager`, set the port attribute to the desired port other than 161, e.g. 4071 as shown below:

```
<udp_port_to_snmp_manager     port = "4071" />
```

5. In vcst_snmp_agent_cfg.xml, keep all the other settings unchanged and save.
6. Restart (or stop then start) ViewCast SNMP agent service by running Windows service management tool services.msc
7. Right click on ViewCast SNMP Agent.
8. Click **Restart** or **Stop** then **Start**.
9. Configure the SNMP manager to use the same UDP port for SNMP requests. To revert to the use of UDP port 161, simply rename the file vcst_snmp_agent_cfg.xml or remove it or set the above port to 161.
10. Save and then restart the ViewCast SNMP agent.

ViewCast SNMP Agent Logging

By default, all ViewCast SNMP Agent related files are installed into the following directory:

C:\Program Files (x86)\ViewCast\ViewCast SNMP Agent\

The ViewCast SNMP agent log files are generated under the following directory:

C:\Program Files (x86)\ViewCast\ViewCast SNMP Agent\log

These log files may be collected for trouble-shooting purposes. They are kept for up to seven days in the system. The ViewCast SNMP agent automatically deletes outdated log files.

Disable IIS Logging for ViewCast Encoders Web Service

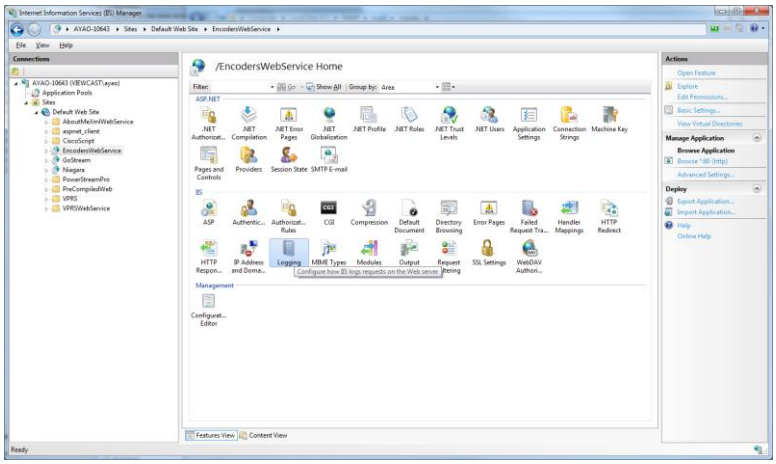
In the current release, while the ViewCast SNMP agent is running, *disable* the IIS (Internet Information Services) logging for ViewCast Encoders Web Service. This step avoids the 10 G free hard disk space disk space from being filled by the IIS log files (which would take about three months).

Enable the IIS logging for ViewCast Encoders Web Service *only* during the debugging of issues. It will be disabled as soon as the debugging is complete.

To disable IIS logging for ViewCast Encoders Web Service:

1. In the search box, enter **IIS** or **IIS Manager**.
2. Click on Internet Information Services (IIS) Manager.

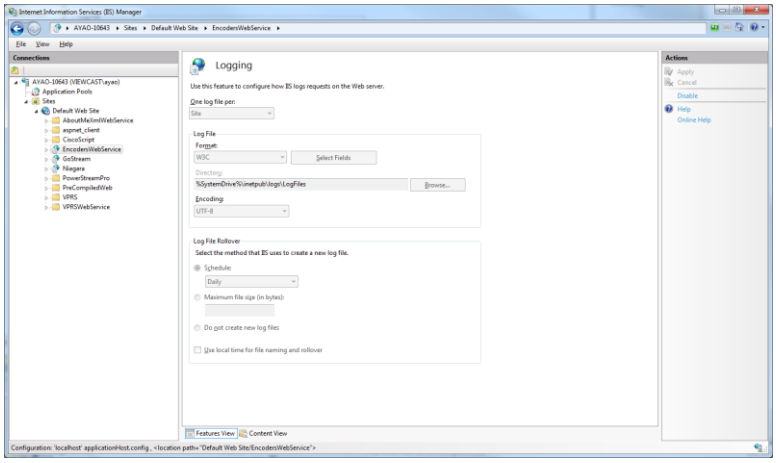
Figure 110. Internet Information Services (IIS) Manager



3. On the left side, click on **Sites** ➢ **Default Web Site**.
4. Click on **EncodersWebService**.
5. Right click on **Logging** under IIS section in the Windows as shown above.

6. Open Feature (Figure 111).

Figure 111. Feature



7. On the right side under **Actions**, click **Disable**.

Note: After IIS is restarted, the IIS logging for the EncodersWebService would remain disabled.

8. Repeat steps 1 through 7 to enable the IIS logging for the **EncodersWebService** in case debugging is needed.

ViewCast SNMP Agent MIB Files

By default, all standard MIB files and ViewCast private MIB files that come with the installation package will be installed into the following directory:

C:\Program Files (x86)\ViewCast\ViewCast SNMP Agent\

You may load the following MIB files into the SNMP manager tool.

- VIEWCAST-AVENCODER-MIB.txt (ViewCast private MIB)
- VIEWCAST-AVENCODER-TRAP-MIB.txt (ViewCast private)
- SUPERMICRO-HEALTH-MIB.txt (3rd-party MIB from SuperMicro Computer)
- RFC1213-MIB.txt (Standard SNMP MIB)
- SNMP-COMMUNITY-MIB.txt (Standard SNMP MIB)

Retrieving IP and MAC Addresses of the Encoder System

The IP address and interface table are part of standard MIB functions as defined in RFC1213-MIB. It is implemented by the native Windows SNMP service.

- The IP address per interface or NIC can be retrieved through .iso.org.dod.internet.mgmt.mib-2.ip.ipAddrTable as defined in RFC1213-MIB.
- The MAC address per interface or NIC can be retrieved through .iso.org.dod.internet.mgmt.mib-2.interfaces.ifTable.ifEntry.ifPhysAddress as defined in RFC1213-MIB

SNMP Examples

Query of system information (SNMP GET Example)

1. Locate the VIEWCAST-AVENCODER-MIB.txt under C:\Program Files (x86)\ViewCast\ViewCast SNMP Agent\.
2. Load the VIEWCAST-AVENCODER-MIB.txt into the SNMP manager.
3. Set object ID to .iso.org.dod.internet.private.enterprises.viewcast.avencoder.avencoderMIB.systemInfo.
4. Specify correct IP address of the targeted ViewCast SNMP agent: **xx.xx.xx.xx**
5. Verify the Port field is set to **161.**
6. Set SNMP version to **v1.**
7. Specify community such as **getpassword** with at least community right of **READ ONLY**.
8. Send **SNMP GET** request message to the targeted ViewCast SNMP agent.

Start/stop an encoder through SNMP

Use the same steps to load and expand VIEWCAST-AVENCODER-MIB until .iso.org.dod.internet.private.enterprises.viewcast.avencoder.avencoderMIB.avencoderObjects.avencoderTable.avencoderEntry.avencoderCommand.

1. Set object ID to something like: .iso.org.dod.internet.private.enterprises.viewcast.avencoder.avencoderMIB.avencoderObjects.avencoderTable.avencoderEntry.avencoderCommand.77.80.69.71 where 77.80.69.71 is the ID of the associated encoder.
2. Specify correct IP address of the targeted ViewCast SNMP agent: **xx.xx.xx.xx**
3. Verify the Port field is set to **161.**
4. Set SNMP version to **v1.**
5. Specify community such as **setpassword** with community right of **READ CREATE**.
6. Specify Set Value to **start** or **stop**.
7. Send SNMP SET request message to the targeted ViewCast SNMP agent.

Start/stop all encoders per group through SNMP

Use the same steps to load and expand VIEWCAST-AVENCODER-MIB until .iso.org.dod.internet.private.enterprises.viewcast.avencoder.avencoderMIB.avencoderObjects.avencoderGroupTable.avencoderGroupEntry.groupCommand.

1. Set object ID to something like .iso.org.dod.internet.private.enterprises.viewcast.avencoder.avencoderMIB.avencoderObjects.avencoderGroupTable.avencoderGroupEntry.groupCommand.71.114.111.117.112.49 where **71.114.111.117.112.49** is the ID of the associated encoder group.
2. Specify correct IP address of the targeted ViewCast SNMP agent: **xx.xx.xx.xx**
3. Verify the Port field is set to **161.**
4. Set SNMP version to **v1.**
5. Specify community such as **setpassword** with community right of **READ CREATE**.
6. Specify Set Value to **start** or **stop**.
7. Send SNMP SET request message to the targeted ViewCast SNMP agent.

Start/stop all encoders in the system through SNMP

Use the same steps to load and expand VIEWCAST-AVENCODER-MIB until .iso.org.dod.internet.private.enterprises.viewcast.avencoder.avencoderMIB.systemCommand.sysCommand.

1. Set object ID to .iso.org.dod.internet.private.enterprises.viewcast.avencoder.avencoderMIB.systemCommand.sysCommand.
2. Specify correct IP address of the targeted ViewCast SNMP agent: **xx.xx.xx.xx**
3. Verify the Port field is set to **161.**
4. Set SNMP version to **v1.**
5. Specify community such as **setpassword** with community right of **READ CREATE**.

6. Select Set Value to start_all_encoders or stop_all_encoders.
7. Send SNMP SET request message to the targeted ViewCast SNMP agent.

Start SNMP trap listener

1. Locate the VIEWCAST-AVENCODER-TRAP-MIB.txt under C:\Program Files (x86)\ViewCast\ViewCast SNMP Agent\.
2. Load the VIEWCAST-AVENCODER-TRAP-MIB.txt into the SNMP manager.
3. Verify the Port field is set to **162.**
4. Specify community such as **notifypassword** with at least community right of **NOTIFY**.
5. Select **Authenticate v1/v2c** traps to match community name.
6. Start the Trap Listener.

Appendix A: DRM for Windows Media

You can protect your content using a technology called Digital Rights Management (DRM). Niagara SCX allows you to encrypt your content with DRM technology while you are encoding. You can apply DRM while encoding to a file and when broadcasting a stream. Users will be required to obtain a license to play the content. This license contains the key to unlock the content and the rights that govern its use.

> *Note: A third-party license provider issues licenses, so you must set up an account with a third-party license provider to protect your content.*

Niagara SCX automatically detects any available DRM profiles imported on the encoding system. If no DRM profiles are installed, the DRM functions in Niagara SCX are disabled.

To enable the DRM function in Niagara SCX:

1. Set up an account with a third-party license provider and create a DRM profile.
2. Import the DRM profile using the Microsoft® Windows Media Encoder application included with Niagara streaming media systems or available as a free download from Microsoft Corporation (http://www.microsoft.com).
3. Restart the unit on which Niagara SCX is installed, allowing the software to auto-detect and enable its DRM functions.

Importing a DRM profile

If you have not already done so, set up an account with a licensed provider and create a DRM profile. Once you create the DRM profile, you must use Windows Media Encoder to import the profile on the encoding system.

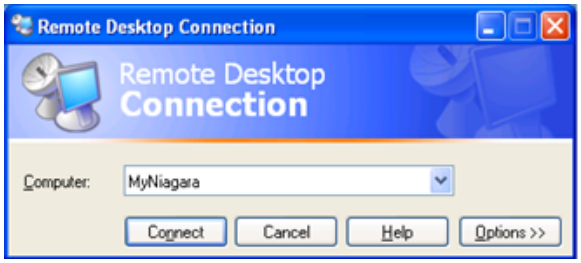
Windows Media Encoder is included in Niagara streaming media systems that have Niagara SCX version 5.0 or later installed. To access the desktop of the Niagara system, attach a keyboard, a mouse, and a monitor to the system. If the system is installed in a location that does not provide physical access, you can use Windows Remote Desktop Connection to access the desktop.

IMPORTANT! When connecting to a Niagara 2200 series system using a remote desktop connection, it is extremely important you set the Local Resources to ***Leave at remote computer*** *before connecting to the system.*

To open a remote desktop connection:

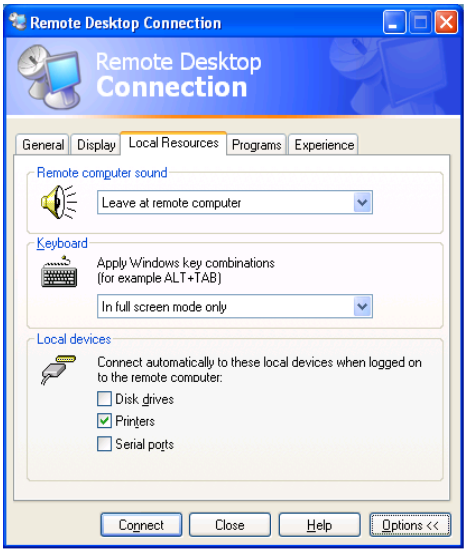
1. Open the **Remote Desktop Connection** (Figure 112).

Figure 112. Remote Desktop Connection



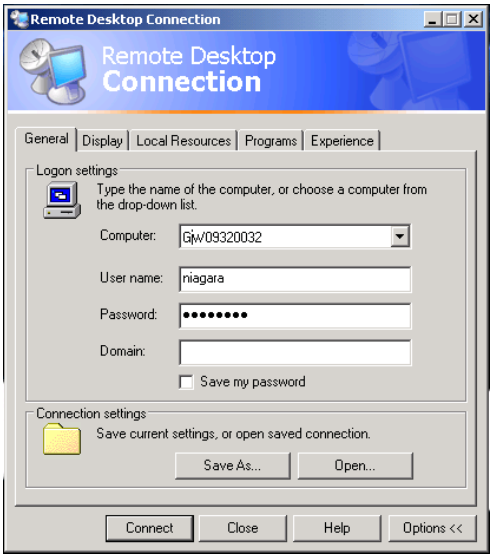
2. Click **Options**. The setting tabs display.
3. Click the **Local Resources** tab.
4. Under **Remote computer sound**, click **Leave at remote computer option** from the drop-down list (Figure 113).

Figure 113. Local Resources tab



5. Click the **General** tab (Figure 114).

Figure 114. General tab



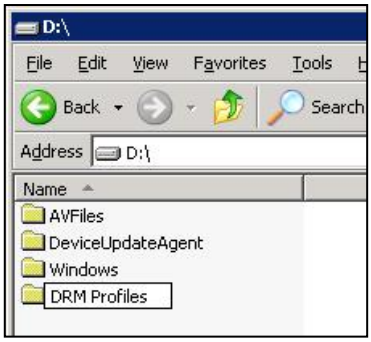
6. In the **User Name** field, type **scxuser**.
7. In the **Password** field, type **viewcast** to connect the system using remote desktop.

WARNING! When exiting from Remote Desktop Connection, do not log off. Instead, exit/close the session from the system. This step allows its internal programs to continue running.

8. Go into Windows Explorer and change the folder settings to show all files and show protected files.
9. Copy the DRM profiles to a protected location on the encoding system to ensure they are not removed or erased accidentally (Figure 115).

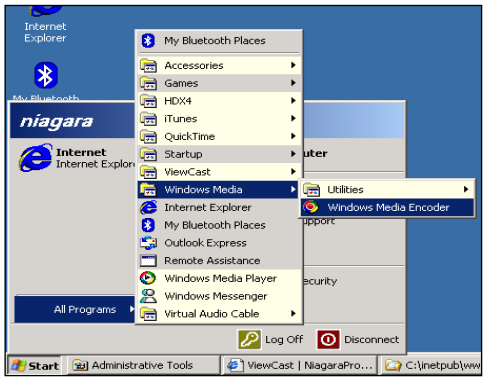
Note: ViewCast recommends you create a new directory on drive D on the Niagara system and use this directory to store your DRM profiles.

Figure 115. DRM Profiles



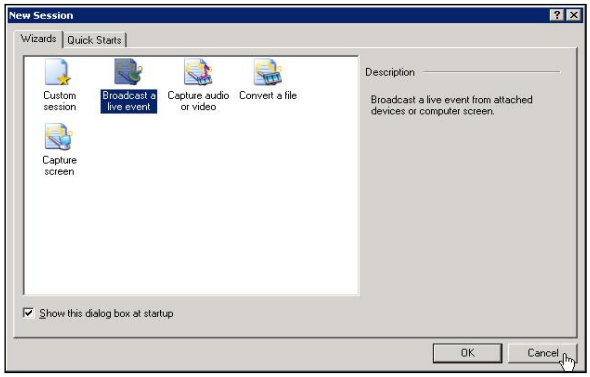
10. Start the Windows Media Encoder application on the system (Figure 116).

Figure 116. Starting Windows Media Encoder



11. When the New Session Wizard displays, click **Cancel** (Figure 117)**.**

Figure 117. New Session Wizard



12. Click **Properties** under the top menu bar (Figure 118).

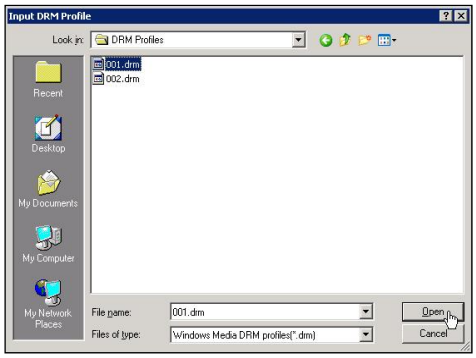
Figure 118. Properties tab

13. Click the **Security** tab**.**

14. Click **Import** and browse to the location of the DRM profiles on the system's hard drive.

15. Select the DRM profile you wish to import and click **Open** (Figure 119).

Figure 119. DRM Profile



16. Repeat this process for each DRM profile you wish to import.
17. Exit from the Windows Media Encoder application when finished.

Note: If the system prompts if you want to save your encoding session, click ***No option****.*

18. Disconnect Remote Desktop Connection from the system (Figure 120). *Do not log out.*

Figure 120. Disconnect Remote Desktop

19. Restart the system.

Appendix B: H.264 Advanced Settings

H.264 Presets

In general, the Main Profile Default presets for the H.264 encoder Custom Presets will meet your streaming requirements. For devices with restricted bandwidths and under certain conditions such as low bit rates, motion specific, or constant bit rate applications, you may need to adjust the Advanced Encoder Settings values in each line. This section includes some information to help you select Advanced Encoder Settings. These examples are suggestions. You should understand and select the appropriate values for your streaming application. See *Settings* for explanations of each setting variable.

Setting	Value Range
BFramesMax	0 to 4
GOPSize	1 to 4000
GOPSizeMin	1 to 4000
InLoopDeblockingFilterAlpha	-6 to 6
InLoopDeblockingFilterBeta	-6 to 6
LookaheadFrames	0 to 200
NoiseReduction	0 to 1500
QuantizerMax	1 to 51
QuantizerMin	1 to 51
ReferenceFrames	0 to 16
SceneChangeDetectThreshold	0 to 4000
TrellisRDQuantization	0 to 2

The following Custom Presets are available for the H.264 Advanced Encoder Settings:

- Baseline Profile
- Baseline Profile - Minimal CPU
- Main Profile Default
- Main Profile – Minimal CPU
- Baseline Profile - User Adjustable
- High Profile - Default
- High Profile Default - Max Video Quality

You can adjust all of the Custom Presets above. The “Minimal CPU” profiles are tuned to allow lower CPU usage and are especially suitable for smaller single CPU encoding applications. You may also select the **Restore Defaults** link on the lower right-hand corner of the table to set all values for all Custom Presets to the default settings.

Baseline profile is for video conferencing and mobile applications and has the lowest demands on CPU load and memory usage, but the lowest resulting quality. Main profile is for standard-definition TV, while high profile is best for HD video.

> *Note: You can use each profile for any resolution video with expected increases in video encode quality and corresponding impacts to CPU and memory. Finally, you may use additional changes to the Advanced Encoder Settings to further refine the video encoding.*

Settings

Setting	Explanation
BFramesMax	This value sets the maximum number of concurrent B-frames you can use. More B-frames improve video quality but also increase CPU load, in some cases considerably. Only Main or High Profile support B-frames. Changing this value when Baseline Profile is selected has no effect.
GOPSize	This value sets the maximum interval between IDR (also called reference) frames. Theoretically, higher values improve compression because I-frames have more data but it can also increase the appearance of fluctuating quality because more P- or B-frames (partial) are used. If you see “pulsing” or “strobing” in the encoded video, this value may be too low.
GOPSizeMin	This value sets the minimum length between IDR (reference) frames. This setting limits the minimum length after each I-frame before another can be placed. The suggested default is 1 x the frame rate.
InLoopDeblockingFilterAlpha	This value affects the overall amount of deblocking applied to the video. Higher values remove blocky appearance more efficiently, but retain less detail causing the image to appear softened. This value is the most important parameter in determining the overall sharpness of your encode. To make a low bit rate encode look smoother, set this to a positive number. The default value is **0** and should be sufficient to eliminate most blocking. In general, values lower than **-3** and higher than **3** are usually not used, but could be if so desired.
InLoopDeblockingFilterBeta	This value determines whether something in a block is a detail or not when deblocking is applied to it. Lower values apply less deblocking to more flat blocks with detail present and more deblocking to blocks without detail. Higher values cause more deblocking to be applied to less flat blocks with details present. Raising the value of Beta deblocking is a good way to get rid of ringing artifacts by applying more aggressive filtering to blocks that are not very flat. Lowering the value of Beta deblocking is a good way to reduce the amount of DCT blocks without blurring the entire picture. Again, the default value of **0** usually is good enough. Set this to a positive number to smooth out low bit rate video encodes. In general, values

Setting	Explanation
	lower than **-3** and higher than **3** are usually not used, but could be if so desired.
LookaheadFrames	This value is the amount of frames the encoder keeps in its buffers to perform various calculations. The higher this value, the better the quality and the closer to a constant bit rate the encoded video will be; however the CPU load is higher and the latency from the source through the encoder is also higher. Setting this to **0,** depending on the encoder, will provide the lowest latency possible.
NoiseReduction	This value performs adaptive noise reduction, estimates film noise based on the value and attempts to remove the noise by dropping small details before quantization (**100** to **1000** for de-noising). As a result, using Noise Reduction can make the encoded video look smoother, but with much less detail.
QuantizerMax	This value sets the maximum for the quantizer. The range is 1 to **51** with **51** being the highest and least complex quantizer available. The value **51** provides the most encoding, thus making the picture quality farthest away from the original. However, lowering this value increases CPU load, in some cases considerably. Also, this value affects the bit rate with **51** keeping closer to a constant bit rate, while lower values cause the bit rate to vary.
QuantizerMin	This value sets the minimum quantizer ever used in the encoder. The lower the quantizer, the closer the encoded video is to the original. For most video, any value below **10** appears almost the same as the original video.
ReferenceFrames	This value is the number of previous frames each P-frame can use as a reference. More reference frames increase the quality of the encoded video but increases the CPU load. Each increase, however has reduced benefit and takes longer to encode.
SceneChangeDetectThreshold	Higher values of this setting cause the encoder to detect more scene changes. For example, a fast action movie that has many scenes can have this value set lower than a newscast, but the newscast video quality may suffer a bit at the same value. **60** is a good default for most applications. **0** turns off scene change detection, but this is not recommended. Higher values also increase CPU usage.
TrellisRDQuantization	This value performs Trellis quantization to increase the visual quality of the encoded video: the higher the value, the better the qualities of the video, but the higher the CPU load. This value can also improve visual quality at lower bit rates. However, settings above **0** are applicable for Main or High Profile in the Custom Presets.

MPEG-4 Presets

In general, the Main Profile Default presets for the H.264 encoder Custom Presets will meet your streaming requirements. For devices with restricted bandwidths and under certain conditions such as low bit rates, motion specific, or constant bit rate applications, you may need to adjust the Advanced Encoder Settings values in each line. This section includes some information to help you select those Advanced Encoder Settings. These examples are suggestions and you should understand and select the appropriate values for your streaming application. See *Settings* for explanations of each setting variable.

Setting	Value Range
BFramesMax	0 to 4
GOPSize	1 to 4000
GOPSizeMin	1 to 4000
InterlacedDCTComparison	0 to 14
LookaheadFrames	0 to 200
MotionEstimationComparison	0 to 256
MotionEstimationMethod	5 to 10
MotionEstimationPenaltyCompensation	0 to 256
MotionEstimationSubPixelComparison	0 to 256
MpegQuant	0 to 1
QuantizerMax	1 to 51
QuantizerMin	1 to 51
SceneChangeDetectThreshold	0 to 4000
TrellisRDQuantization	0 to 2

Settings

Setting	Explanation
BFramesMax	This value sets the maximum number of concurrent B-frames that you can use. More B-frames improve video quality but also increase CPU load, in some cases considerably. Setting B-frames to a value more than 0 changes the video encoding format from Simple Profile to Advanced Simple Profile.
GOPSize	This value sets the maximum interval between key frames. Theoretically, higher values improve compression because I-frames have more data but it can also increase the appearance of fluctuating quality because more P- or B-frames (partial) are used.
GOPSizeMin	This value sets the minimum length between key frames. It limits the minimum length after each I-frame before another can be placed. The suggested default is 1 x the frame rate.
InterlacedDCTComparison	This value optimizes processing of interlaced video input. It is not usually used, but it may help the encoding quality of interlaced video.
LookaheadFrames	This value is the amount of frames the encoder keeps in its buffers to perform various calculations. The higher this value, the better the quality and the closer to a constant bit rate the encoded video will be, however the CPU load is higher and the latency from the source through the encoder is also higher. Setting this to **0,** depending on the encoder will provide the lowest latency possible.
MotionEstimationComparison	Setting this value causes the encoder to select what motion estimation comparison to use. **0** is the default for MPEG4 encoding. You can use higher values but they can increase CPU and memory usage, sometimes with minimal significant gain in quality. *Note: The correct range is **0** to **14**, but a value of **256** that affects the color portion of the video only is available. Use this value only when you completely understand the encoding needs. All other values are ignored.*
MotionEstimationMethod	Setting this value causes the encoder to select what motion estimation method to use. **5** is the default for MPEG4 encoding. You can use higher values but they can increase CPU and memory usage, sometimes with no significant gain in quality.
MotionEstimationPenaltyCompensation	Setting this value causes the encoder to apply a

Setting	Explanation
	compensation for any errors that arise in the motion estimation while encoding the video. The actual value of **256** corresponds to a value of 1.0 and is set to maximum as the default.
MotionEstimationSubPixelComparison	Setting this value causes the encoder to select the sub-pixel motion estimation comparison. **0** is the default for MPEG4 Simple Profile encoding because only Advanced Simple Profile allows for sub-pixel motion estimation. You can use higher values but they can increase CPU and memory usage, sometimes with minimal significant gain in quality. *Note: The correct range is **0** to **14**, but a value of **256** that affects the color portion of the video only is available. Only use this value when you completely understand the encoding needs. All other values are ignored.*
MpegQuant	Setting the value of this to **0** will use quantizers for Simple Profile MPEG4 encoding while using **1** will use quantizers for Advanced Simple Profile and for high bit rate encoding more detail from the original video will be preserved. For lower bit rate encoding, using **0** smooths out the video appearance.
QuantizerMax	This value sets the maximum for the quantizer in use. The range is 1 to **51** with **51** being the highest and least complex quantizer available. The value **31** is a good default. However lowering this value increases the CPU load, in some cases considerably. Values above **31** are available, but could significantly affect video quality negatively.
QuantizerMin	This value sets the minimum quantizer used in the encoder. The lower the quantizer, the closer the encoded video is to the original. For most video, any value below **10** appears almost the same as the original video.
SceneChangeDetectThreshold	Higher values of this setting cause the encoder to detect more scene changes and insert extra I-frames as needed. For example, a fast-action movie with many scenes could have this value set lower than a newscast, but the newscast video quality may suffer a little at the same value. **45** is a good default for most applications using MPEG4 encoding. **0** turns off scene change detection, but is not recommended. Higher values also increase CPU usage.
TrellisRDQuantization	This value performs Trellis quantization to increase the visual quality of the encoded video by determining the

Setting	Explanation
	optimal encoding: the higher the value, the better the video quality but the higher the CPU usage. This value can also improve visual quality at lower bit rates.

MPEG-2 Presets

In general, the Main Profile Default presets for the H.264 encoder Custom Presets will meet your streaming requirements. For devices with restricted bandwidths and under certain conditions such as low bit rates, motion specific, or constant bit rate applications, you may need to adjust the Advanced Encoder Settings values in each line. This section includes some information to help you select those Advanced Encoder Settings. These examples are suggestions and you should understand and select the appropriate values for your streaming application. See *Settings* for explanations of each setting variable.

Setting	Value Range
BFramesMax	0 to 4
GOPSize	1 to 4000
GOPSizeMin	1 to 4000
InterlacedDCTComparison	0 to 14
LookaheadFrames	0 to 200
MotionEstimationComparison	0 to 256
MotionEstimationMethod	5 to 10
MotionEstimationPenaltyCompensation	0 to 256
MotionEstimationSubPixelComparison	0 to 256
MpegQuant	0 to 1
QuantizerMax	1 to 51
QuantizerMin	1 to 51
SceneChangeDetectThreshold	0 to 4000
TrellisRDQuantization	0 to 2

Settings

Setting	Explanation
BFramesMax	This value sets the maximum number of concurrent B-frames that you can use. More B-frames improve video quality but also increase CPU load, in some cases considerably. Setting B-frames to a value more than 0 changes the video encoding format from Simple Profile to Advanced Simple Profile.
GOPSize	This value sets the maximum interval between key frames. Theoretically, higher values improve compression because I-frames have more data but it can also increase the appearance of fluctuating quality because more P- or B-frames (partial) are used.
GOPSizeMin	This value sets the minimum length between key frames. It limits the minimum length after each I-frame before another can be placed. The suggested default is 1 x the frame rate.
InterlacedDCTComparison	This value optimizes processing of interlaced video input. It is not usually used, but it may help the encoding quality of interlaced video.
LookaheadFrames	This value is the amount of frames the encoder keeps in its buffers to perform various calculations. The higher this value, the better the quality and the closer to a constant bit rate the encoded video will be, however the CPU load is higher and the latency from the source through the encoder is also higher. Setting this to **0,** depending on the encoder will provide the lowest latency possible.
MotionEstimationComparison	Setting this value causes the encoder to select what motion estimation comparison to use. **0** is the default for MPEG2 encoding. You can use higher values but they can increase CPU and memory usage, sometimes with minimal significant gain in quality. *Note: The correct range is **0** to **14**, but a value of **256** that affects the color portion of the video only is available. Use this value only when you completely understand the encoding needs. All other values are ignored.*
MotionEstimationMethod	Setting this value causes the encoder to select what motion estimation method to use. **5** is the default for MPEG2 encoding. You can use higher values but they can increase CPU and memory usage, sometimes with no significant gain in quality.
MotionEstimationPenaltyCompensation	Setting this value causes the encoder to apply a compensation for any errors that arise in the motion estimation while encoding the video. The actual value of

Setting	Explanation
	256 corresponds to a value of 1.0 and is set to maximum as the default.
MotionEstimationSubPixelComparison	Setting this value causes the encoder to select the sub-pixel motion estimation comparison. **0** is the default for MPEG2 Simple Profile encoding because only Advanced Simple Profile allows for sub-pixel motion estimation. You can use higher values but they can increase CPU and memory usage, sometimes with minimal significant gain in quality. *Note: The correct range is **0** to **14**, but a value of **256** that affects the color portion of the video only is available. Only use this value when you completely understand the encoding needs. All other values are ignored.*
MpegQuant	Setting the value of this to **0** will use quantizers for Simple Profile MPEG2 encoding while using **1** will use quantizers for Advanced Simple Profile and for high bit rate encoding more detail from the original video will be preserved. For lower bit rate encoding, using **0** smooths out the video appearance.
QuantizerMax	This value sets the maximum for the quantizer in use. The range is 1 to **51** with **51** being the highest and least complex quantizer available. The value **31** is a good default. However lowering this value increases the CPU load, in some cases considerably. Values above **31** are available, but could significantly affect video quality negatively.
QuantizerMin	This value sets the minimum quantizer used in the encoder. The lower the quantizer, the closer the encoded video is to the original. For most video, any value below **10** appears almost the same as the original video.
SceneChangeDetectThreshold	Higher values of this setting cause the encoder to detect more scene changes and insert extra I-frames as needed. For example, a fast-action movie with many scenes could have this value set lower than a newscast, but the newscast video quality may suffer a little at the same value. **45** is a good default for most applications using MPEG2 encoding. **0** turns off scene change detection, but is not recommended. Higher values also increase CPU usage.
TrellisRDQuantization	This value performs Trellis quantization to increase the visual quality of the encoded video by determining the optimal encoding: the higher the value, the better the video quality but the higher the CPU usage. This value can also improve visual quality at lower bit rates.

Appendix C: Mapped Network Drive Setup

Setting up the network drive for the Niagara 2200 to export files, requires setting up two administrator accounts on a remote PC where the shared folder will be located:

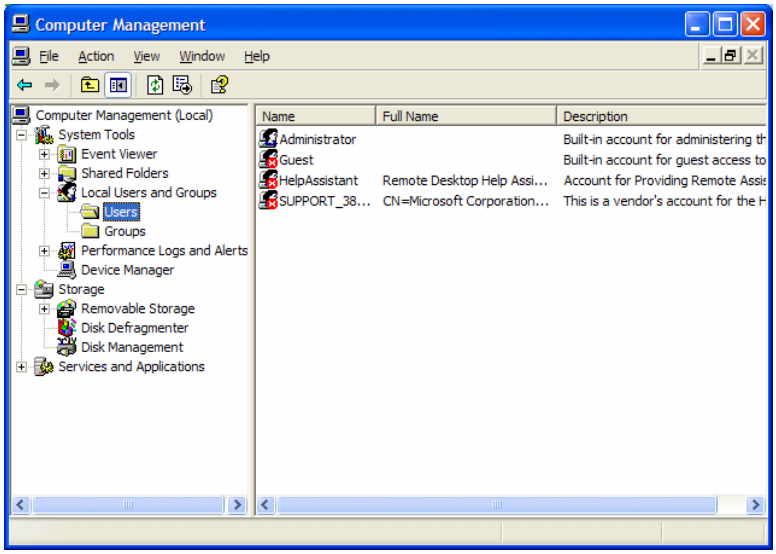
- One account for the username N2200
- One account for the username SCXUser

The shared folder is created on the remote PC with full access for both Niagara 2200 and SCXUser. On the Niagara 2200, the mapped network drive is created to reconnect at logon using the SCXUser username.

To set up user accounts on a remote PC:

1. Click on **Start** ➢ **Control Panel**.
2. Double-click on **Administrative Tools.**
3. Double-click on **Computer Management**.
4. Expand Local Users and Groups. Click on **Users**.

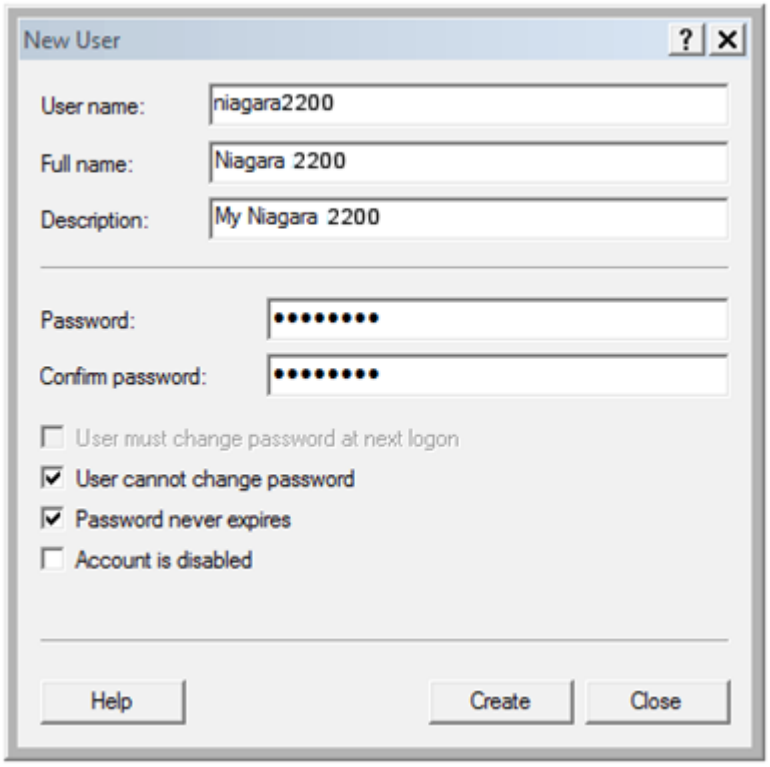
Figure 121. Users



5. Under **Action**, select **New User**.
6. Enter niagara2200 for the User name.
7. Full name and Description are optional.
8. Enter **viewcast** for the **Password**.

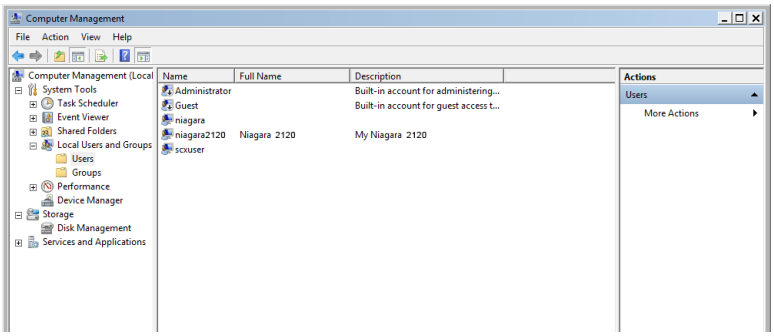
9. Enter **viewcast** for the Confirm password.
10. Disable **User must change password at next logon**.
11. Enable **User cannot change password**.
12. Enable **Password never expires**.

Figure 122. New User window



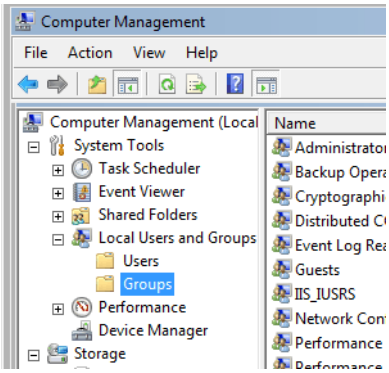
13. Click **Create**.
14. Repeat steps 5 through 13 to create the user **SCXUser** using the password **viewcast**.
15. Click **Close**.
16. The two new users appear in the users list.

Figure 123. Added Users



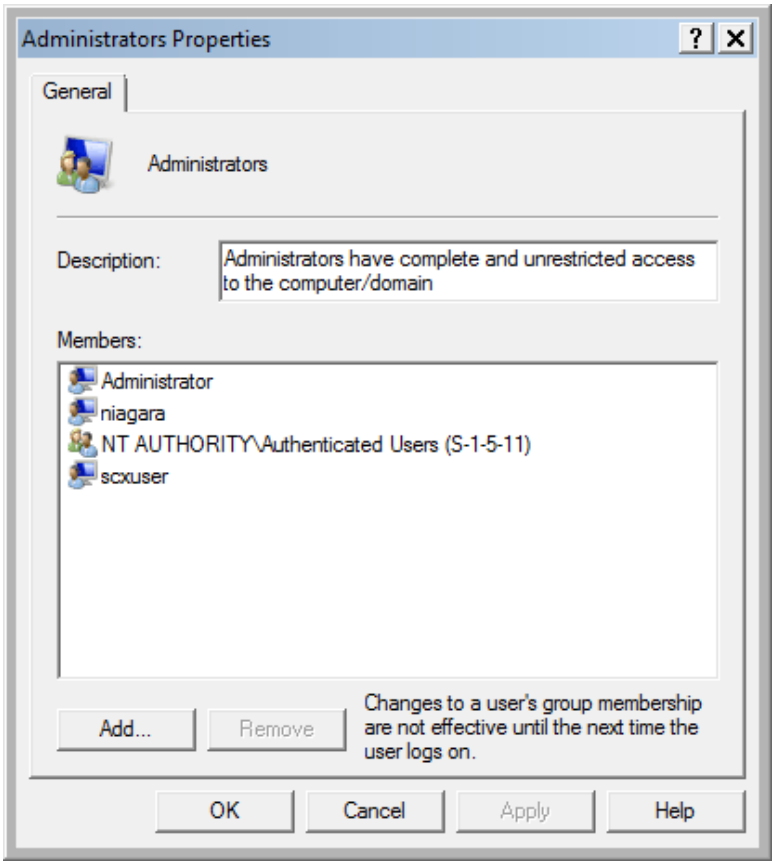
17. In Computer Management, click **Groups**.

Figure 124. Groups



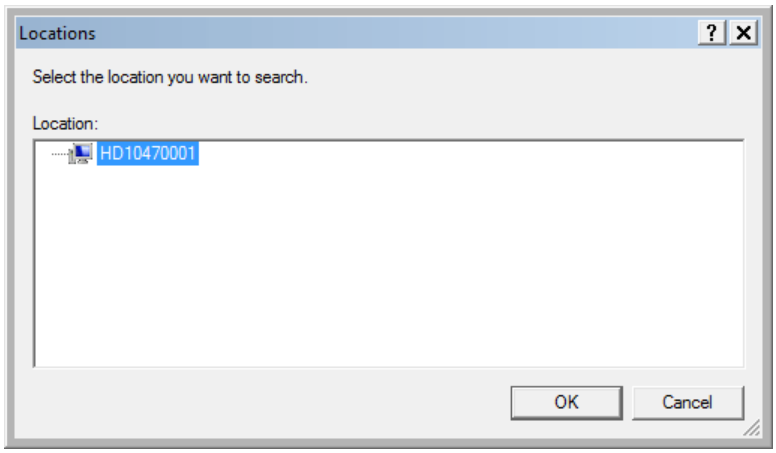
18. Double-click on **Administrators**.
19. Click **Add**.

Figure 125. Administrators Properties window



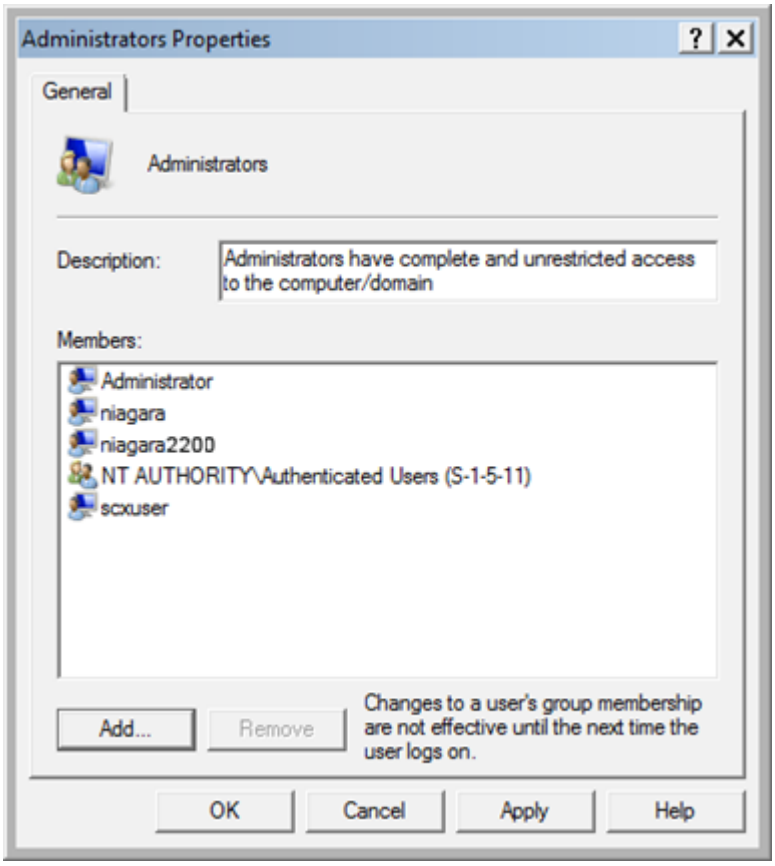
20. Click **Add**. The Select Users window displays.
21. Click **Locations**.
22. Select the PC, then click **OK**.

Figure 126. Locations window



23. Enter **niagara2200** for the object name, and then click **OK**.
24. The user **niagara2200** appears in the list of Administrators.

Figure 127. Administrator Properties



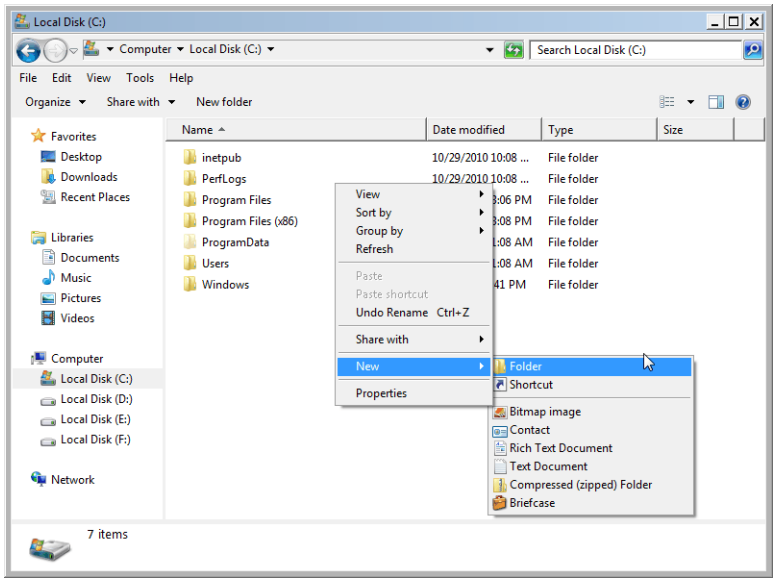
25. Repeat steps 19 through 22 to add SCXUser as an administrator.

To create the shared folder:

Note: The shared folder(s) must be created on the remote PC.

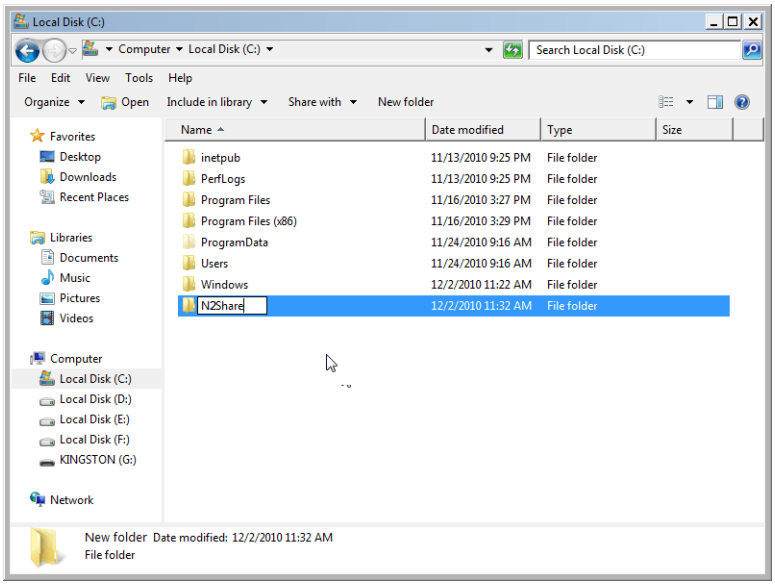
1. Open Computer.
2. Open the drive where the shared folder will be created.
3. Right click, select **New**, then **Folder**.

Figure 128. Create new folder



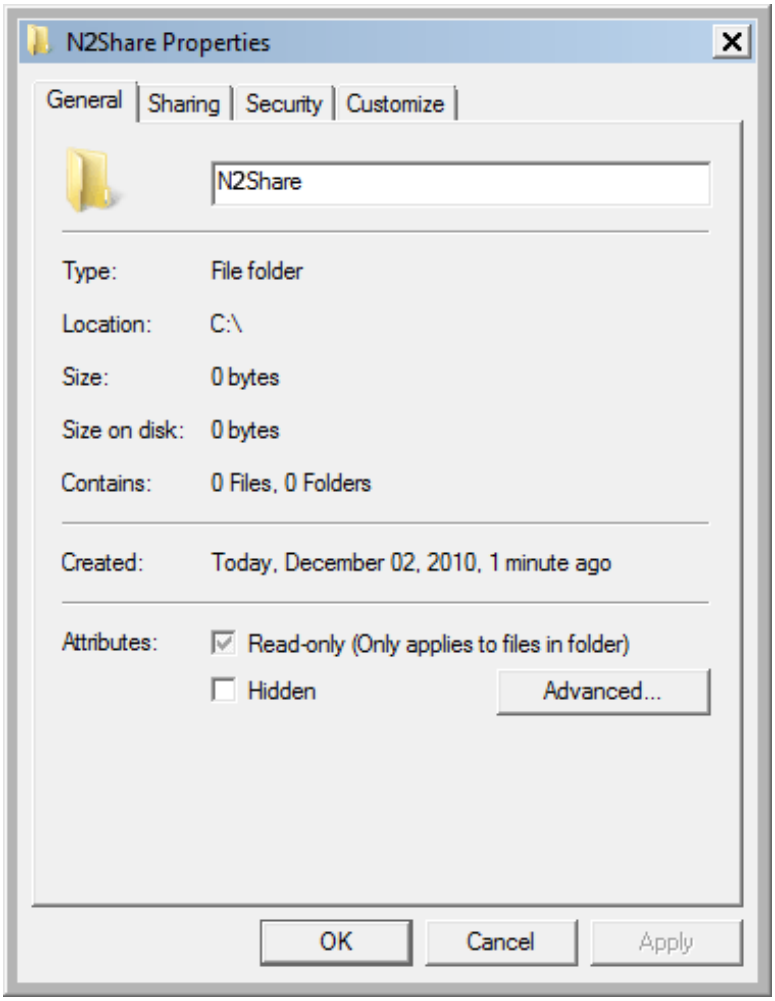
4. Enter a name for the folder (for example, N2Share).

Figure 129. Folder name



5. Right click on the folder, and then select **Properties**.

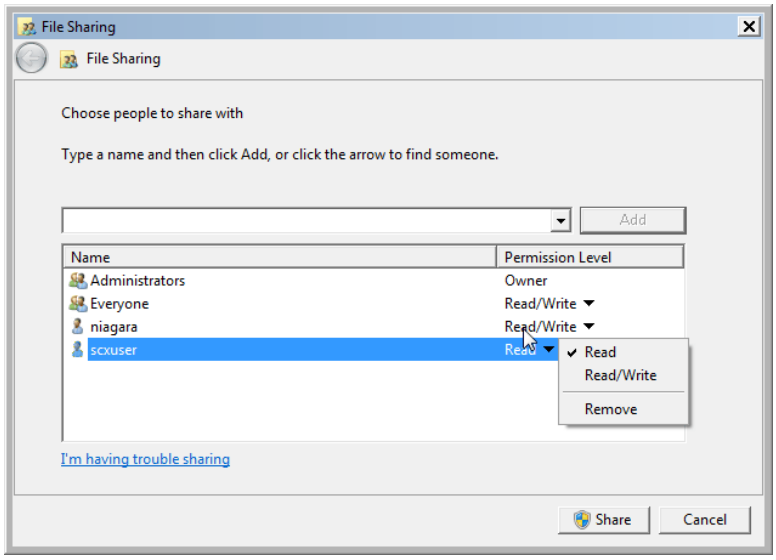
Figure 130. Folder Properties window



6. Click on the **Sharing** tab.
7. Click **Share**. The File Sharing window displays.
8. Type a name and then click **Add**, or click the arrow to select someone from the drop-down list.

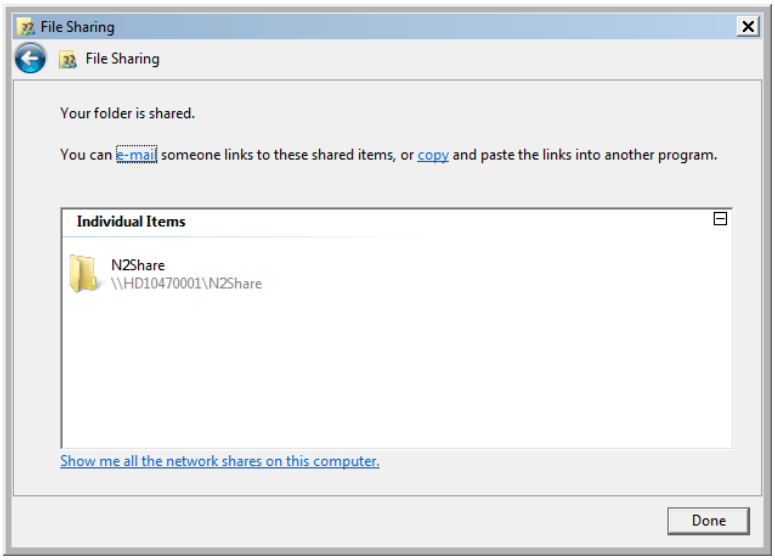
9. Use the drop-down list under permission level for this user and select Read/Write.

Figure 131. Read/Write permissions



10. Click **Share**.
11. Repeat steps 2 through 9 to add SCXUser to the Share Permissions.
12. Click **Done**.

Figure 132. File Sharing window



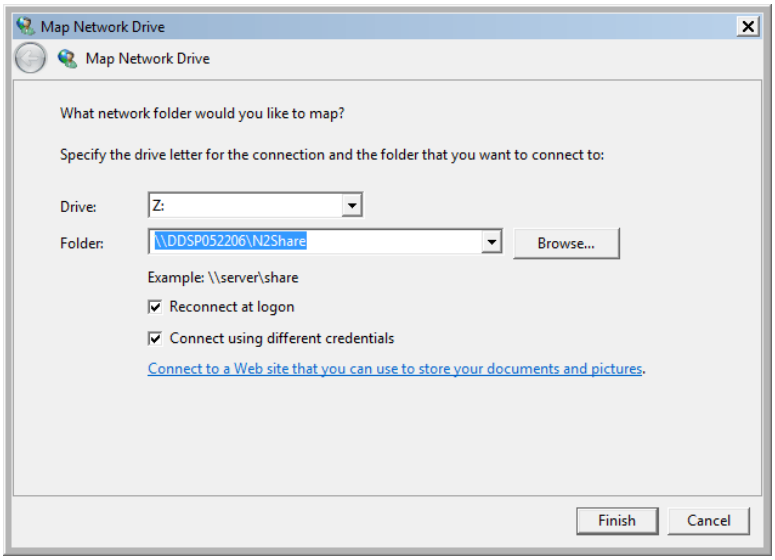
13. Click **Close** to close the share properties.

To map the network drive:

Note: Create a mapped network drive to the remote shared folder that will reconnect at logon. Once the mapped drive is created and the Niagara 2200 is rebooted, the user will be able to export to the network drive.

1. On the Niagara 2200, open **Computer**.
2. Under Tools, select Map Network Drive.
3. Select a drive.
4. In the text box for folder, enter the network path to the shared folder on the remote PC (for example, \\DDSP052206\N2Share).
5. Make sure **Reconnect at logon** is enabled.
6. Enable Connect using different credentials.
7. Click **Finish**.

Figure 133. Map Network Drive window



8. Enter SCXUser as the User name and viewcast as the Password.
9. Click **OK**.
10. Click **Finish**. After a few moments, the network share will open.
11. Close the window. The mapped drive will now appear in My Computer under Network Drives.
12. Reboot the Niagara 2200.

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